





Acknowledgements

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| Retailers/Wholesalers Ahold Albertson's Best Buy Carrefour CVS Fleming Metro Sears Target Tesco | Manufacturers Coca-Cola Georgia-Pacific Gillette Henkel Johnson & Johnson Kodak Kraft Masterfoods Nestlé Philips Procter & Gamble | Standards Organisations EAN International ECCC UCC |
|---|---|--|
| | Procter & Gamble Sara Lee | |
| | Unilever | |

Foreword

Modern technologies are well known for their acronyms. To an outsider, terms like GSM, ISDN and HTML did not mean that much. "As long as it works I don't care" is what we used to think. We praised ourselves lucky that in our more mature area of the economy we could still use a clearer language. Although we didn't like it when it happened, we all knew what "out of stock" meant.

But today even our good old Fast Moving Consumer Goods (FMCG) industry cannot do without the benefits the new technologies offer, and we have set up organisations that are trying to capture those benefits for all stakeholders involved. The acronyms come with it for free.

The Global Commerce Initiative (GCI) was set up in 1999 and aims to improve the collaboration between retailers and manufacturers by encouraging a speedy development and consistent adoption of global trading standards. GDS, Global Data Synchronisation, provides the key for our business. GCI is convinced that with global voluntary standards both retailers and manufacturers – but most of all consumers all over the world – will benefit from a streamlined supply chain.

GCI builds on the foundations laid down by Efficient Consumer Response initiatives in Europe, North and South America, Asia and Africa and by VICS in the USA. In these regions marked progress for the FMCG industry has been achieved by improving collaboration in non-competitive areas.

The booklet you have in your hands clearly proves that the same is possible on a global scale. It contains a business study by GCI and Cap Gemini Ernst & Young showing that:

- Global Data Synchronisation is the fundamental building block for a collaborative supply chain;
- retailers and manufacturers benefit equally.

This case study contains all the elements for decision-making and will help individual companies build their own specific case and roadmap for implementation.

We strongly recommend this case study to you. We are confident your business will reap the benefits of the implementation of voluntary standards for which GCI is striving.

Antony Burgmans Cees van der Hoeven Co-chairmen, Global Commerce Initiative

The Case for Global Standards

Creating the Business Case for Global Data Synchronisation in Your Company

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Executive Summary: The Case for Global Standards

This report is the result of extensive research, interviews and dialogue with numerous experts in the industry. With regard to data synchronisation, all business case elements have been identified and integrated in a full business rationale. The results of the study presented in this report will support decision-making on the adoption of global standards by manufacturers and retailers in the consumer packaged goods (CPG) industry.

The work that has been done provides the background and business rationale for adopting global standards and addresses the implications of implementation. During the course of this work, it became apparent that the basic voluntary standards for product and location identification (Global Trade Item Number and Global Location Number) are extremely important for the industry. However, the real added value from these standards will be achieved through the additional adoption of Global Data Synchronisation (GDS).

The business case rationale leads to a number of key conclusions:

- Data synchronisation is currently relatively underdeveloped. This situation is impeding further improvements in the supply chain.
- Substantial benefits can be achieved. Even in the medium term, retailers and manufacturers can reduce their supply chain costs by 1 percent to 3 percent, depending on their current state. Furthermore, in addition to these savings there will be a positive impact on revenue from the recommended improvements.

- The long-term benefits are even greater, as these foundational standards enable the large-scale implementation of collaborative business processes such as Collaborative Planning, Forecasting and Replenishment (CPFR).
- The benefits range from productivity gains and working capital reduction to revenue gains and increased customer satisfaction.
- Companies of all sizes will enjoy the benefits.
- The identification of the benefits makes it clear that manufacturers and retailers have the same potential for improvement. The impact on the bottom line can be 10 percent to 15 percent for both.
- To maximise the benefit potential, the industry must collaborate in order to improve end-to-end processes that involve item and party data exchange.
- The implementation costs will vary depending on the current state and ambition of each company.
- Data accuracy is an absolute prerequisite for successful data synchronisation. Without it, the process will only add costs.

During our research, it also became apparent that implementing standards and data synchronisation on a global scale is crucial:

• A uniform approach is the only way to make collaborative concepts (e.g., Efficient Consumer Response) scaleable, efficient and rewarding.

 Management of companies will become more efficient and enhanced.

There is also a strategic imperative to move forward now and not wait any longer:

- The standards are becoming available. There is enough agreement on the basics to move forward uniformly.
- The window of opportunity to accomplish this on a global basis exists now. However, it will not be long before we may be faced with a multitude of solutions that lead to a lock-in on technology, leaving the way out obstructed by disinvestments.
- There is money to be gained through internal adoption even before external synchronisation. This can lead to a competitive advantage for early adopters.
- The full success of data synchronisation depends heavily on quick adoption by the industry. Critical mass is needed in order to make a positive business case for the industry.
- Ongoing leadership from the more advanced retailers and manufacturers will be needed to move this forward. A collaborative initiative is required to create mutual benefits from the start.
- Companies that wait will find their competition jumping onto this bandwagon and thus achieving a competitive advantage.

The goal is attainable:

• There is a global effort in place, represented by parties such as EAN•UCC and the Global Commerce Initiative (GCI), to provide the needed coordination across the globe. The necessary voluntary standards for GDS are being further developed on a global basis through the EAN•UCC Global Standards Management Process (GSMP).

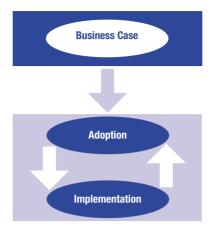
- The elements of the architecture and applications are available, having been developed over time through several independent initiatives. They need to be coordinated and linked into a uniform network of data pools. Many of the potential data pools have already agreed to become GDS compliant.
- There is no need to change all the current processes to start achieving benefits.

This report should provide the industry with the necessary information to move forward and realise this goal. The journey to implementation will vary by company and can be mapped using the findings of this report and the detailed logic used to develop the rationale. The online version of this report can be found on www.globalcommerceinitiative.org and www.cgey.com/GCIcase. The latter site also contains information about the detailed logic used to develop the business case rationale.

Ongoing leadership will move global standards forward, leading to a more efficient CPG industry. It's critical that the industry does not let this opportunity slip away and become an example of a broken standard that cannot be mended because the lock-in on different solutions is too great. Examples of similar lost opportunity abound: Consider the lack of a standardised global power plug or a consistent law about driving on the left or right side of the road. Just think how much could have been saved were there a uniform standard in place.

All elements for decision-making are available in this report. Now is the time for the industry to go and make this happen.

Business Case to Support Adoption and Implementation of Global Standards



source: Cap Gemini Ernst & Young

Introduction: Toward a Global Language

English is now spoken fluently by 1.5 billion people, a quarter of the world's population. English has established itself as the global language. This was not always the case, however. Up to 1950, English was certainly not accepted by everyone. But this global language has made possible exchanges of information in science, commerce and culture. The gathering of knowledge has been accelerated through the usage of a common language.

This global language has also become a necessity. There is a need to understand each other, to resolve conflicts and avoid unnecessary confusion. Translating messages from one language into another is simply not as efficient as sharing a common language. It's fair to say that there has never been a greater need for a global language.

This document investigates the case for a global "system language" in the consumer packaged goods (CPG) industry. It is the result of interviews with numerous retailer and manufacturer executives and extensive discussions between retailers and manufacturers in an open and stimulating environment hosted by Cap Gemini Ernst & Young (CGE&Y). The business case is primarily focussed on the next step to achieve true global standards: Global Data Synchronisation (GDS). This is a key step to reach more sophisticated collaboration between retailers and manufacturers on a global scale and to make processes such as efficient replenishment and collaborative planning a reality on a broader basis.

The need for these global trading standards may not be apparent to everyone at this point in time. One must take a long-term perspective to grasp the true need for these common standards. However, the moment to act is now, as there is a substantial opportunity to move to a global set of rules for data synchronisation before we find ourselves with a host of different solutions that are not interoperable.

GCI and Global Standards

The mission of the Global Commerce Initiative (GCI) is to better meet the needs and expectations of consumers around the world by ensuring the availability of consistent voluntary global supply chain standards. GCI aims to facilitate global supply chain efficiency and effectiveness and consumer value creation through a co-operation driven by manufacturers and retailers operating at the global level.

GCI's objective is also to build a collaborative interbusiness process, which will endorse a recommended set of standards, enabling technologies and best practices with worldwide application, in order to provide benefits to all users, large and small, wherever they operate. This global approach will be developed and documented together with international standards organisations.

GCI has already published several recommendations ranging from implementation guidelines for the GTIN to best-practice recommendations for CPFR. All the work has been accomplished by Global Working Groups, which consist of participants from retailers, manufacturers and the standards organisations EAN International and UCC.

The time has come where many of the recommendations are clearly defined and now need to be adopted and implemented. That means, however, that the industry must find the time and budget to change some of its current operations. To facilitate this, it is essential that the right business rationale can be presented to the budget holders (often the board of the operating company) to justify starting the work.

This document describes that business rationale and is based on an analysis that can help organisations within the industry build their individual business cases for the recommended changes. Keep in mind that the business case does not encompass all of the GCI recommendations, but that it is focussed on the foundational standards around product and location identification and product and party information synchronisation.

The technical details of the standards and processes themselves are not the subject of this report. For reference, brief descriptions of some of these topics, along with a glossary of terms, are provided in the Appendix.

¹ David Crystal, "English as a Global Language," 1977



Why a Global Approach to Standards?

As international trade increases, the need for a global approach to standards for companies large and small becomes ever more apparent.

Consider what life and business would be like were there no global standards underlying many common activities. Imagine:

- Having to first agree on common e-mail standards before you could send an electronic message to a colleague or trading partner.
- Having no common language when booking a hotel in a foreign country (or writing a report on global standards).
- Still needing telephone operators to switch between national networks.
- How frustrating it was when presentation formats for Harvard Graphics, Lotus, WordPerfect, PowerPoint and Apple were all incompatible.

So, why global standards? We have addressed the toughest question right from the start and will come back to it a number of times during the course of this report. There are several reasons for considering a global rather than a local approach to industry standards:

- A global approach will result in less diversity in communication between existing trading partners (even locally), thereby reducing overhead. It can also reduce the development effort since it requires that companies take action only one time. This uniformity will enable better collaboration on non-competitive processes.
- 2. A global approach will facilitate cross-regional trading. International trade will become easier and less prone to error. And communication between retailers and manufacturers will become more efficient

- not only on an operational level, but also on a more centralised level to accommodate the effective management of global relationships. In addition, the increased reach of trade will make it easier for smaller companies to bring their products to the attention of a larger group of customers.
- 3. A global approach will provide synergies within organisations that operate across regions. Reporting and information sharing will be more consistent and certain services can be centralised.
- 4. There currently are local standards and proprietary systems. In a lot of cases, these standards, their implementations and operational adherence need to be harmonised. This process of improvement creates the opportunity to move to more uniform standards at the same costs. After all, how standard is a standard when everybody doesn't use the same one?

Current and Future Trends: The Importance of Going Global

These reasons may not apply to all companies to an equal degree. However, when placed in a broader context of current trends, it becomes apparent that a voluntary global standard will be increasingly applicable to the entire industry over time. Let's take a closer look at some of the existing trends and how they are making a global approach more relevant.

Cross-border trading: Foreign trade has grown steadily since the beginning of the Industrial Revolution, with the exception of the 1930-1950 period. The accompanying chart (above) shows the value of exports adjusted for the GDP and demonstrates the relative importance of exports over the years. Note that the time scale is distorted by the paucity of data prior to 1950.

Summary of World Trade Volumes (Annual percent change) Ten-Year Averages 1996 1997 2001 1984-93 1994-2003 1994 1995 1998 1999 2000 2002 2003 World Trade 5.5 6.6 97 6.8 10.5 42 5.3 12.4 -0.2 25 6.6 Volume 8.8 Volume of Trade Exports Advanced economies 8.6 8.3 6.0 10.5 5.2 0.9 6.0 4.0 -1.3 6.3 Developing countries 11.6 11.0 13.8 4.3 3.0 4.8 7.0 Advanced economies 8 7 93 59 116 2 1 Developing countries 44 7.9 6.5 9.6 11.7 -0.81.3 16.0 2.9 6.4

Source: IMF Global Economic Outlook, May 2002

A more recent overview of imports and exports by the International Monetary Fund (IMF) shows that cross-border trading is expected to pick up again after a short slowdown in 2001 (see chart). While further internationalisation of trade is expected, the growth will be regulated by the need for an environmentally sustainable economy and the appropriate emphasis on localisation to accommodate cultural differences.

This trend is also true for trade between retailers and manufacturers in the consumer packaged goods industry, although exact figures are lacking. The further opening of the European market through the introduction of the euro will also accelerate the development of cross-regional trade in Europe. In addition, the global orientation of consumers and the multiethnic society are resulting in increased assortment at retail. While many of these products are sourced locally through an importer or agent, the trend toward global sourcing is certainly growing. A recent study by CGE&Y titled "State of the Art in Food" found that retailers and manufacturers overwhelmingly agree regarding this trend. Both groups indicated that Eastern Europe, Southeast Asia and China are becoming more important as suppliers of food products, and many of them have moved their buying offices to these countries.

These trends are fuelling the relevance of global standards as an enabler for cross-regional trade (reason 2 referenced earlier).

Multiregional coverage of manufacturers and retailers:

Increasingly, both retailers and manufacturers are establishing multinational groups of operating companies to gain economies of scale or expand their selling base, a trend that began first in the manufacturing segment. However, these benefits are hard to realise when a company operates in 23 countries with 23 different standards-dialects. The more recent consolidation and increased globalisation in the retail segment is apparent when looking at the growth in countries of operation of some of the major retailers (see chart, following page). This behaviour is not limited to the bigger players. Medium-sized companies are also establishing a multiregional base of operation (Amazon.com, for example).

The need to gain benefits from this scale is in line with the continual rationalisation of the value chain resulting from margin pressure. Efficiency and cost reduction are critical to remaining in business, particularly in a time when the economy is tight. Clearly, steps in this direction are being taken. For instance, the lowering of transport and communication costs has made it possible to distribute elements of the internal supply chain across the world. This leads to new production locations in Asia or Africa that manufacture for Western Europe or North America. In fact, it is estimated that one-third of all foreign trade is intra-company.

It is expected that the increasing globalisation of retailers and manufacturers will continue in the future. Many retailers are planning their next steps to expand from Western Europe into Eastern Europe, Europe into Asia Pacific, or from the United States into Europe or vice versa. What's more, local players are also consolidating as a defence mechanism in anticipation of foreign takeovers.

The overall trend of more internal communication across regions is driving the need for global standards to help these companies manage their operations in an efficient manner (reason 3 referenced earlier).

Increased collaboration: The need for further optimisation stretches through the whole supply chain. Retailers and manufacturers are collaborating to bring down the total costs in the supply chain through initiatives around category management, CPFR and vendormanaged inventory.

This collaboration increases the need for a common language and at the same time illustrates the importance of competition. A global, common language will allow companies to stop devoting energy and resources to activities that can and should be co-operative, and start devoting more energy and resources to activities that are competitive in nature (or to areas where competition has shifted). This refutes the concern that some organisations may have that sharing common information standards with competitors might some-

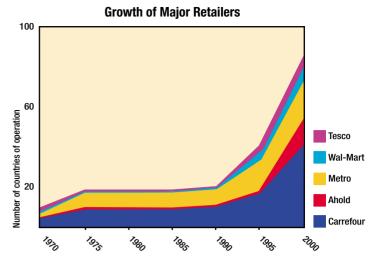
Cell Phones: The Shift to Global Standards

The cellular communications industry provides an excellent example of the shift from regional standards to global standards. Consider the Global System for Mobile Communications (GSM), currently available in 122 countries, which allows people to use the same phone in London, Hong Kong and Australia. This system is extremely convenient and has even saved lives: In one case, several people were stranded in a disabled sailboat off the coast of Indonesia. One woman had her cell phone, and was able to get help by calling a friend who was thousands of miles away, in London (The Dallas Morning News, May 2002). A rescue such at this - or simply the seamless business or personal use of cell phones when travelling - is virtually impossible in Latin America, where there are countless incompatible networks. and even in the U.S., where there are three competing, incompatible networks. In this instance, it's easy to see the desirability of global vs. local or regional standards.

On another level, we can see the shift from proprietary technology to common standards. The industry's traditional model - where a company such as Nokia would design and make its own chips, software and phones - is running out of gas. Right now, doing all the work yourself just isn't economically viable unless you have the scale of Nokia. That's why smaller players such as Philips, Alcatel and Ericsson are outsourcing their phone production, or, in Ericsson's case, even moving to share research and development with its new partner Sony. The bigger companies are also attempting to licence their technology to others. All these activities lead to a more horizontal industry model where the market is characterised by specialists in a certain part of the supply chain.

All this increased horizontal specialisation and collaboration results from the inefficiencies that are created by a proprietary network. The alternative is to use the same standards on a voluntary basis and collaborate where competition is cost prohibitive.

The same is true for other industries. Even though the CPG industry is much more evolved than some businesses, the current effort to further reduce the costs in the overall chain also implies a move away from proprietary standards.



Source: IGD Research (Global Sourcing: A Vision for the Future, Executive Outlook, 2002)

how hurt their ability to compete. On the contrary, the ability to focus more on value-added activities will help rather than harm the competitiveness of an organisation

This trend is fuelling the need for a global standard to enable more efficient collaboration (reason 1).

E-business developments: The e-business developments of the past few years have added a new dimension to the global discussion. The Internet provides a medium where all parties can communicate with each other instantly and against lower and lower costs. Many of the e-marketplace developments have allowed companies to seize the opportunity to improve all supply chain processes. One of the major stumbling blocks, however, is the lack of a common system language. As a consequence, these marketplaces invented their own rules, giving rise to a host of different protocols and standards.

The Internet is accelerating the standards discussion in two ways:

- 1. It makes the need for a common language more visible.
- 2. It leaves only a limited window of opportunity in which to develop global standards before the fragmented solutions become accepted (out of necessity) throughout the industry.

In light of these trends, trading standards will prove to be necessarily global. Although the industry functions fairly well with its current local approaches, the underlying trend and the acceleration of the Internet will make going global the obvious choice in retrospect.

While this trend does not provide a separate reason for taking a global approach to standards, it emphasises the other three reasons and increases their urgency.

The Road to Global Trading Communication

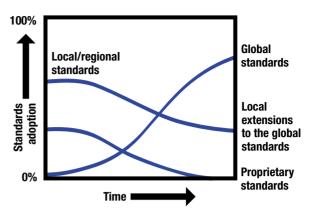
Once we have established the endgame, the next logical question is: How will we get there? This is not a year-2000 type of issue that will become a reality with the press of a button.

How to Get to Global Standards in CPG **Globally transparent** trading communication Global Source: Cap Gemini Ernst & Young standards **Proprietary** standards **Translation**

Local trading

communication

Tentative Adoption Scheme of Standards Over Time



Source: Cap Gemini Ernst & Young

In considering the benefits from globally transparent trading communication, it helps to draw on a realworld analogy. When we are dealing with people from different countries, whether they are colleagues from our own firm or trading partners, we have the same need for transparent communication. We want to understand each other in the best way possible. The global standard in this case seems to be to have everyone speak "international English."

services

In the world of international trade, there are currently several alternatives in place:

Proprietary standards: One alternative is the facilitation of international trade through proprietary standards. These are often developed out of necessity (or lock-in). In the case of our analogy, we can assume that a French-based company would prefer to have their meetings conducted in French. All the employees would be required to speak French, even if they were located in the Netherlands or Finland. This would be presented as a requirement when applying for a job, to ensure that everyone in the firm could understand each other.

Outside the company, of course, things would be somewhat more difficult, and communication with customers would become harder and harder as people were moved around. In the long run, this alternative hardly seems like a viable solution. And even in the short term it is problematic as it could create islands that would be difficult to merge.

Translation hubs: Another alternative is to translate all the traffic. Again using our analogy, this would be comparable to a firm including interpreters at all of its meetings (internal or with customers). Although interpreters are a solution in instances where there is no other option, they clearly take away some of the directness of the communication. It's often true that by the time a question has been fully answered through an interpreter, you discover that in fact the question was misinterpreted and that the answer has little to do with the question that was asked.

Still, there are many solutions that take a translation approach. E-marketplaces, for instance, can act as translation hubs. And the next improvement to the Internet will most likely be the semantic Internet, where all terms will be interpretable by machine, instead of just readable by humans. It is true, of course, that there will always be the need for translation to accommodate the large legacy of current ERP and other systems that do not yet use the voluntary global standard. The point, however, is that translation should be brought to a minimum to make our global goals feasible.

Global voluntary standards: The best way to realise these global objectives is to establish a set of global standards. It is important to note that even with the advent of a global standard, local rules and standards for trading communication will not die out overnight. Depending on the amount and type of interaction, local trading relationships may continue to use local rules for quite some time. There will be a convergence of global standards with regional/local ones, leading to local extensions to the global standards. The first push toward global standards will come from the multinational manufacturers and retailers, but this will disseminate to local players as well.

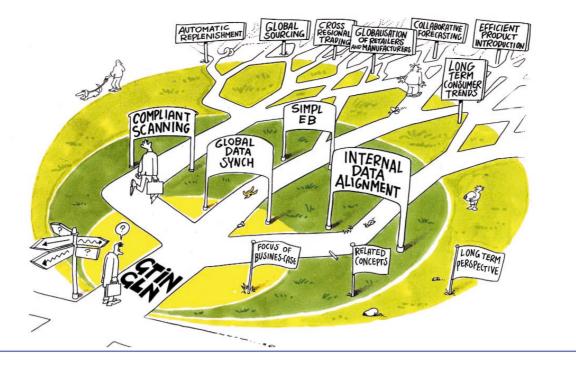
Building a Hierarchy of Standards

It is also important to recognise that a full set of global standards will not be achieved overnight. Rather, we are building the foundation for many things to come.

The basic building blocks for a global standard are now being set in place (for more information about these standards, please see the Appendix, where additional sources are referenced):

Product identification: Global Trade Item Number (GTIN) - The GTIN is a single, unique number assigned to all products and services, so that these products and services can be easily and accurately identified by everyone, regardless of country, region or continent.

Party and location identification: Global Location Number (GLN) - The GLN provides businesses with a globally accepted method of identifying legal entities and locations, such as plants, offices, stores and any other shipping or receiving point.



Data synchronisation: Processes for keeping everyone on the same page, such as Global Data Synchronisation (GDS) – Different business partners will need to store certain information within their own internal systems. It is critical that the information stored by one company matches the corresponding data in the systems of their business partners. GDS will accomplish this goal.

Basic business processes: Common, value-added business processes can be built on the foundation of the previous standards. Once GTIN, GLN and GDS are adopted, businesses can begin to take full advantage of highly simplified, efficient communications using the principles of Simpl_EB (Simple E-Business). However, these principles require a higher level of data integrity and synchronisation.

Collaborative business processes: More advanced collaborative processes can be built in a scaleable fashion on top of this efficient layer of information and transaction exchange. Many of the supply chain improvements that are promoted by Efficient

Learning the Global Language

Using our analogy of international English, it's clear that the first step toward this common language is to agree on what we mean by the different elements of the language. First we must define the nouns. This can be compared with product and location identification. Then we need to explain the characteristics of these things, so we agree on the adjectives. These can be compared with the attributes and the synchronisation of the item data. After that, we must be able to communicate changes, so we agree on the verbs. These can be compared with the standards for the transactions, such as orders and invoices. The process continues for all the elements of the common language, although it may take some time for everyone to agree on the adverbs and other subtleties.

Consumer Response (ECR) can only be effectively enabled through these global standards.

Source: Cap Gemini Ernst & Young

These standards and processes will be adopted consecutively, as each step builds on the previous steps to a certain degree.

Focus of the Business Case

At this point, it becomes important to limit our playing field. We have chosen to focus the business case on the first "island of stability" in this move to global standards: the Global Data Synchronisation process and the necessary preparation for that, the adoption of GTINs and GLNs.

The reason for this choice is that Global Data Synchronisation is the nearest point on the way to going global where benefits from the new standards are very attainable. Implementing GTIN and GLN is so important as an enabler for further standards that it is difficult to develop a business case for just these standards. Adding Global Data Synchronisation will bring true benefits that are not currently attainable.

As the accompanying illustration shows, there are several other improvements along the way that are related to GTIN, GLN and GDS but are not the main focus of the business case. We will refer to the need for internal data alignment and compliant scanning, and mention the additional benefit from simple E-Business messages, but that will not form the main line of the business case.

Looking even further along, the ultimate goal will be to achieve more extensive supply chain improvements. The business case presented here, however, is limited to considering attainable benefits in the coming three to five years through the implementation of GTIN, GLN and GDS. But we began this chapter with the long-term perspective to demonstrate the reasons for taking a global approach.

The chapters that follow will focus on these key elements (GTIN, GLN and GDS) as the industry builds the foundation for a global voluntary trading standard.

What Will Change?

Implementation of the recommended standards for product and location identification and the synchronisation of item and party information will impact many retailer and manufacturer processes. An examination of the current and future states of these processes provides a clearer picture of the significance of this impact.

With global standards will come change. The impact will be felt in a wide range of retailer and manufacturer process areas.

Current State

The current-state processes in both manufacturing and retail companies have been created to operate within the bounds of the organisation, and often within the department bounds within that organisation. Thus, in the accompanying diagram on the following page, information flows have been designed to transfer information in a point-to-point manner from process to process and from organisation to organisation. Each of these information transfers or data flows typically has its own data definition, based primarily on the needs of the receiving process. The exchange between manufacturer and retailer follows this model, with each exchange having a defined set of data that is unique and largely non-standardised.

To deal with the lack of standardisation of business information, organisations expend effort in several ways related to both lack of information and erroneous information. Where there is a lack of information, businesses must invest in information collection. In the case of erroneous information, activities include correction activities, restorative activities, wasted activities and prevention activities.

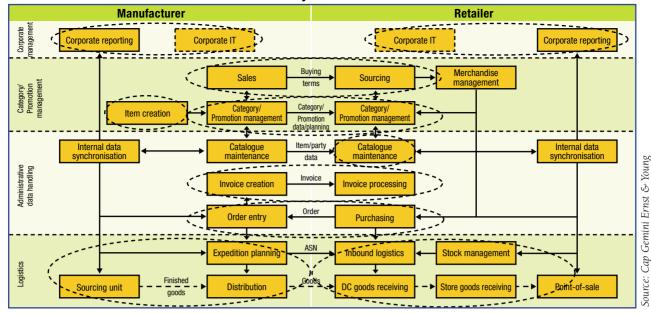
- 1. **Correction** activities are carried out when someone detects an information error and takes action to correct the error.
- Correction activities often lead to restorative activities, which are undertaken to undo or otherwise deal with the results of any unnecessary activities that took place prior to detection of the error.

- 3. **Wasted** activities, whether corrected or not, represent that effort undertaken due to erroneous information that would otherwise not have been undertaken
- 4. Error **prevention** activities include verification and examination activities aimed at discovering errors before they can cause wasted effort.

Because the costs of wasted and restorative activities are so obvious, companies have created significant error prevention and error correction capabilities. Most of these activities are carried out by individuals in the course of their other responsibilities, making it difficult to assess the true time and effort involved in these activities. In fact, some of the most significant effects of the lack of standardised information are a consequence of the lower productivity caused by high levels of information collection, error detection, error correction, restoration and wasted activities. In addition to the activities themselves, time must be spent managing these activities. The lowered productivity can be seen in queues at loading and unloading docks, data-entry backlogs and numerous other bottlenecks in company processes.

The following sections examine typical current-state processes and the impact on those processes of both the lack of information and the four error-related activities. The overview of these processes and the flow of item and party information between them is shown in the accompanying diagram ("Item/Party Data Flows," page 14). Each section that follows refers to part of this diagram.

Item/Party Data Flows



Personal Travel: Moving "Products" Through the Supply Chain

We are all products. Carefully manufactured and unique products. We all have our own attributes: name, height, weight, home address, work address, etc. We may have a unique identifier code for the tax authorities and other governmental records. It is not a globally accepted code, however. So when we travel globally, we must be identified each time by showing our passport to be "scanned" and recognised.

As we move around the world, we are carried by different vessels and logistics service providers, much the way a product is moved through its supply chain. While we are not sold and bought at each transfer point, our "product info" must be handed over from one service provider to the next. Each new service provider then needs to "scan" us to verify that we are, in fact, the right item that they need to receive, store and move. In this way, the travel bookings and confirmations are much like the order and confirmation messages that are exchanged between manufacturers and retailers.

A recent trip from Amsterdam to Chicago involved five logistics service providers. We were scanned 10 times and filled out additional attributes on several immigration and customs forms. Our product information accompanied us, moving ahead of us to make the reservations and meeting us again at the scan points. However, the inefficiency was evident in all the repetitive activities and excess time that was involved.

Now, how does this work for a crate of bananas?

It's important to keep in mind that the observations come from interviews in the U.S. and Europe and will not apply to the same degree for all companies.

Item Creation

Typically, different parts of a manufacturing organisation work to define the item attributes over the course of several months. Research and development, engineering and marketing departments will each develop different details about a potential new product. At the time that a manufacturer decides to introduce an item into trade, an administrative – typically manual – effort is undertaken to gather and assemble product information for publication. In addition to gathering existing information, this effort will generally include development of logistics information. This information is then published in a variety of different internal and external documents. External documents will include documents intended only for the retailer and documents intended for the end-consumer. In many cases, product information is consolidated in product catalogues containing varying levels of detail about available products. Depending on the needs of different retailers, much information is published uniquely for individual retailers.

Process observations and implications include:

- Added effort to collect missing information at publication time.
- Time-consuming process to publish product information, possibly resulting in delays.
- Possible delays in product availability, awaiting publication of accompanying information.
- Item information published to wrong parties.

Sales and Sourcing

The manufacturer's sales force will schedule meetings with retailers to communicate product features, benefits and characteristics and to negotiate issues such as pricing. Once a retailer agrees to accept a new product into its assortment, the manufacturer's sales representa-

tive will often be required to complete a new product form or to enter information into the retailer's systems.

To create an assortment plan, retailers consider existing product sales and profit performance, insights from their merchants and information from manufacturers. During and after creation of the plan, the retailer typically discusses potential products with a variety of vendors, gathering a wide range of information about those products. This process includes the exchange of price, deal, availability and other information among several departments to order, price, distribute and display each product. Most often, this information is provided in printed form, with significant added data provided directly by the manufacturers' or distributors' representatives, including sales, distribution and marketing. A number of different product summaries, each extracting information from a variety of these information sources, are used to make final decisions about product sourcing. Once product selections are made, manufacturers and distributors are asked to provide product information in forms unique to the specific retailer. This information is then transferred to a variety of departments within the retail organisation.

Process observations and implications include:

- Item not accepted into retail assortment.
- Returns or deductions from shipments of items not accepted into the assortment.
- Significant time spent by the sales force in explaining and accommodating the impact of data errors, including offering special deals and added incentives.
- Additional sales visits made to deliver correct infor-
- Wrong deals offered or negotiated. Incorrect deals on limited items in an assortment can result in the deals being applied to other items.
- The time required to communicate product information limits the number of customers that can be served by any salesperson.

- The time required to assemble product information limits the number of potential products and vendors considered and results in suboptimal assortment.
- Inaccurate or incomplete price and cost information results in flawed assortment plans.
- Inaccurate product comparisons result in suboptimal product selections.

Catalogue Maintenance

Once the product has become part of the assortment, all attributes need to be available at the retailer side. This means that (currently) the manufacturer will be adding many attributes that the retailer is requesting, creating many different versions of the same item information. This information is then sent to the retailer (quite often still on paper) and entered into its systems. The retailer will then add other retailer-specific information, such as stock management and replenishment data, as part of the merchandise and assortment management.

Process observations and implications include:

- Manual, decentralised publication by manufacturers of (changes to) item and party information to many different customers.
- Manual, decentralised receipt and processing by retailers of (changes to) item and party information from many different suppliers.

Internal Data Synchronisation

External data synchronisation is only possible when the data is also internally synchronised. The data must be aggregated from many manufacturer sources and disseminated to all retailer systems that need to use it.

Further maintenance of the data needs to be processed through this chain. All changes need to be made known, validated by the retailer and then updated in all systems. Even though many of these systems make use of the same item master, changes are not available in all systems at the same time, especially when third parties are involved, such as the logistics providers that run the warehouse and distribution centres.

Process observations and implications include:

- Data integrity within companies is a major issue.
 Data is kept in several systems, creating redundancies and discrepancies. The process of alignment to create a consistent set of data is also called Internal Data Alignment (IDA).
- Internal data synchronisation is typically only practised between operating company level and local level (warehouse, plant or store) and not between corporate and operating company.

Typically, the only form of data synchronisation between operating companies and the corporate level is found in reporting analytical data through relatively simple tools; this is true for both manufacturers and retailers.

Ordering

Retailers typically purchase products based on demand forecasts built from POS-based sales, store orders, warehouse shipments, planned promotions and competitive activity. These demand forecasts are combined with on-hand, on-order, lead-time and economic order quantity information to create purchase orders. When purchase order creation is done through automated systems, errors in the automated system are perpetuated until the error is detected and resolved. When purchase order creation is manual, each separate order can introduce errors.

The order information from the retailer is entered into the manufacturer's order-entry system – electronically in cases where the retailer communicates orders via EDI. Many manufacturers do a significant order validation and correction step at this point. Incorrect pack or pallet quantities are corrected and, for retailers with agreements that call for truckload ordering, orders are adjusted to create full truck shipments.

Process observations and implications include:

 An incorrect product is identified in demand calculation, resulting in over-stock, stock-out situations.

- The wrong product is ordered, resulting in reduction in open-to-buy without creating corresponding sales opportunity.
- Incorrect case/pallet quantities cause under-, overorders at the manufacturer.
- The ordered product is no longer available.
- The order is placed to the wrong location.
- Orders that are unable to be completed are returned to the retailer for correction or completion, resulting in delays in product shipment.
- Adjustments to correct product quantities create discrepancies between PO and shipment.
- Incorrect identification of retailer-ordered product results in shipment of the wrong product and return processing, or over-stock, stock-out situations.

Category and Promotion Management

Having introduced products into retailers' assortments, manufacturers shift their top-line focus for these products to maintaining and growing order volume through marketing and promotion management activities. In many cases, these activities are planned and negotiated as part of the sales process, but are also introduced when sales results need to be improved.

A manufacturer's role in promotion management typically involves recommending the timeframe and specific items for promotion and coordinating promotions across a range of different retailers. Retailers will estimate the revenue and margin impact of different alternatives in selecting among the variety of promotions offered by manufacturers.

Process observations and implications include:

- Promotion allowance or deal applied incorrectly to product purchases due to errors in product identification and lack of clear deal timing information.
- Time required for gathering and assembling product sales information limits ability to offer deals at the appropriate time.

Current State of Item/Party Data Exchange: Spilling at Cost



- Deals and promotions applied across broad categories rather than specific products.
- Incorrect promotion information results in suboptimal promotion plan.
- Wrong items ordered for promotion, resulting in outof-stock or higher-cost, expedited shipping.
- Rework of advertising and in-store merchandising when incorrect products are included in promotion.
- Complexity of promotion definition cannot be adequately represented in retail systems, resulting in failure to properly time purchase cost and retail price changes.

Order Fulfilment

As orders are entered into the manufacturer's orderentry system, the work to select and schedule warehouse and carrier activities begins. Warehouse orders for picking and loading are scheduled based on agreed-upon lead times, inventory availability, etc. At this point in the process the sequence of already completed error checks and corrections reduces the number of order problems prior to any manufacturing or warehouse activity. However, during the picking process product identification problems again create wasted effort.

Both retailers and manufacturers execute the actual picking, loading and transportation processes. Manufacturers perform this operation to transfer between manufacturing location and their own DC and between their DCs and retailer stores and DCs. Retailers and third-party logistics providers (3PLs) perform this operation to transfer product between their warehouses and their stores.

Information intensity is particularly high in distribution operations. Orders are converted into picking documents. Shipping documents are created together with an Advance Shipping Notice (or despatch advice) and pallet and case labels. Distribution operations are also responsible for the handling of merchandise returns.

Process observations and implications include:

- Picking and loading schedules based on incorrect items either don't allow enough time or allow too much time for actual work involved.
- Warehouse performance standards incorporate costs of "invisible" inefficiency, preventing optimal warehouse productivity.
- Scheduling of carrier pick-up often waits until actual products have been picked and a truckload staged.
- Wrong item picked.
- Some incorrectly picked items are identified prior to loading and then returned to warehouse locations.
- Wrong quantity picked, resulting in over- or underutilisation of trailer.
- Return of wrong item.

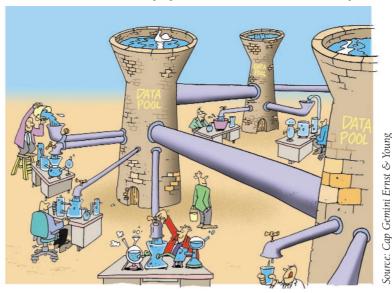
Shipment Receiving

Both retailers' and manufacturers' DCs will schedule and receive shipments based on shipping information received from either the manufacturer or carrier. The level of automated information exchange has a significant impact on the productivity of DC receiving. Operations that use ASN and pallet scanning are able to build optimised unloading and put-away schedules and minimise bottlenecks in the lot. In contrast, operations that do not utilise scanning or ASN require manual inspection of products as they are unloaded and put-away is not optimised. In manual operations there is a much greater chance of information errors of all kinds.

Process observations and implications include:

- · Lengthy unload and put-away cycles.
- Unidentifiable shipments due to the lack of data accuracy.
- Long wait times prior to unload.
- New errors introduced by manual recording of unload and put-away information and off-line entry into information systems.

Future State of Item/Party Synchronisation: Information on Tap



• A significant level of unavailable inventory creates high stock-out situations.

Invoicing

Manufacturers create invoices to match their order, as modified to reflect product shipments. For direct store delivery (DSD) products, the invoice is based entirely on the delivered product, since neither a retail purchase order nor a manufacturing sales order is created.

Retailers compare the information in their original purchase orders with that from their receiving process and the vendor invoice. Because receiving errors are among the most significant opportunities to introduce retail inventory errors, the invoice match process enforces a high level of information integrity. Discrepancies across these documents can result in reductions in payment or delay of payment while discrepancies are researched.

Process observations and implications include:

- Quantity differences between retailer order and manufacturer shipment sometimes change pricing calculations.
- Incorrectly picked items and items not picked create invoice totals that do not match purchase order totals.
- Delay in payment to vendor.
- Adjustments in payment amounts.
- Significant research efforts by merchandising, financial and retail operations staff to identify sources of discrepancies.

Corporate Reporting

Following all these steps, information about the sales and stock levels needs to be reported and aggregated at a more central level. The analytical data is fed to the corporate level and some of it is shared with suppliers.

Because products can have different identifiers in different countries, and because the attributes and classifications do not always line up among operating companies of the same retailer or manufacturer, reporting can

constitute considerable overhead. Therefore, only limited information is shared, leading to incomplete information and a lack of numbers on which to base decisions.

All these processes apply to the communication between one manufacturer and one retailer. When the multitude of trading relationships is considered, as well as the different standards that have been adopted over the years, the situation gets considerably more complicated.

From a corporate perspective, the need to align the processes and data exchange between trading partners has become increasingly obvious. Through mergers and acquisitions, the landscape within one organisation can be very diverse. Sharing common master data is complicated, leading, for instance, to a limited ability to source more centrally.

Conclusion

Ideally, information should flow smoothly. At the moment, however, this is not the case when the information is carried from one place to another manually. This results in a high percentage of incorrect data, sometimes as much as 30 percent. The cartoon on the previous page illustrates the current situation. All the labour-intensive handling of data leads to long delays and a spilling of time and effort.

Future State

The situation described in the preceding section underscores the importance of ensuring that there is agreement on the latest item and party information everywhere that it may be needed. It should not be disseminated on a one-on-one basis, as this creates a complex network of dependant systems that simply wait until they are fed with the latest information. Instead, each part of the chain should be notified immediately of all the agreed-upon changes to the data. The data are stored in data pools, and every set of item or party information has a specific "home" data pool that publishes the data through other data pools to all trading partners that have requested that information.

- 1. A manufacturer will publish item information to the item's home data pool.
- 2. The data pool sends very basic information about the item to the registry.
- The registry holds this basic information about all items and the location of each item's home data pool.
- 4. A retailer will use the registry to locate an item (by GTIN or by classification). The registry returns the details of the item's home data pool.
- The trading partners synchronise the item information between their respective data pools using subscription/publication process.
- The same process applies for synchronising party information, published by manufacturer or retailer, based on the GLN.

Source: GCI

And because trade is not limited by borders, this process should be the same for all countries and parties within the CPG industry.

To support this, the Global Commerce Initiative is promoting the adoption of several standards: GTIN, GLN and the GDS process, including the Global Data Dictionary (GDD) and product classification. When assessing the benefits in the next section, we will consider a future state that can be described by the following elements: global adoption of GTIN, global adoption of GLN, global adoption of GDD and product classification, and global adoption of GDS.

Global Adoption of GTIN

The GTIN (Global Trade Item Number) is the foundation for the EAN•UCC System for uniquely identifying trade items (products and services) sold, delivered, warehoused and billed throughout the retail and commercial distribution channels. It provides an accurate, efficient and economical means of controlling the flow of products and information through the use of an all-numeric identification system. The most commonly recognised and used GTIN is the EAN-13 symbol.

GTINs are utilised on products and cases and are a key component of e-commerce transactions and communications. This global identification system ensures that the corresponding electronic communications will contain information unique to their company and products.

For the context of the future state, we assume that GTINs are globally used and implemented. This means that goods manufactured in one country can be sold in any other country around the world. In other words, the situation in the industry after Sunrise 2005 (see sidebar, page 21) is taken as the future state.

For more details on the GTIN standard, please refer to the EAN•UCC guidelines.

Global Adoption of GLN

The Global Location Number (GLN) provides a standard means to identify legal entities, trading parties and locations to support the requirements of electronic commerce. The GLN is designed to improve the efficiency of integrated logistics while contributing added value to both partners involved, as well as the end customers. Examples of parties and locations that can be identified with GLNs are:

- Functional entities e.g., a purchasing department, accounts payable department
- Physical entity e.g., a warehouse, a dock
- Legal entity e.g., a company, a buyer, a seller

The use of GLNs to identify the legal entities representing the data owner and data recipient is a prerequisite for GDS (Global Data Synchronisation). At the same time, GDS is enabling the synchronisation of this party data, exchanging the attributes that describe the location or party. This means that GDS is expanding the effective usage of GLNs for more than legal entities alone.

For the context of the future state, we assume that GLNs will be adopted for most of the bigger locations such as warehouses and distribution centres.

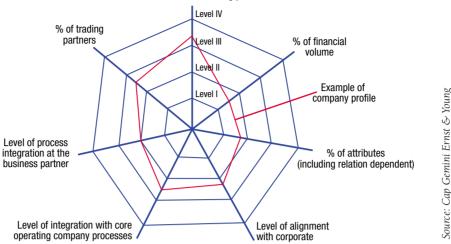
Global Adoption of GDD and Product Classification

The Global Data Dictionary is another prerequisite for the exchange of item and party information, because it specifies what attributes an item should have and identifies the attributes of a party. As such, it is an element of the GDS process that is promoted by GCI.

Currently, the required item attributes can vary from country to country and even from retailer to retailer. There is, however, a core set of attributes put forward as the basis for data synchronisation, and this set is developing toward a more complete set of attributes that should cover everyone's needs. This means that provisions are made for market-specific attributes.

Adoption Dimensions and Levels

% of assortment with trading partner



A separate issue arises around relationship-specific data, such as price and logistical details. These attributes need to be included into the GDS concept to gain the full benefits of data synchronisation. The standards are under development, but are not yet available. For the future state, we consider relationship-specific data to be part of Global Data Synchronisation.

In addition, in order to agree on aggregation levels and identify product equivalents more easily, the product classification specifies the hierarchy of product families and groups. There is a proposed standard that will further evolve over time. This standard is also an element of the promoted GDS process. For the context of the future state, we assume that these standards are accepted globally.

Global Adoption of GDS

GTIN, GLN and GDD are the basic building blocks for the implementation of Global Data Synchronisation. The details of this process are described in several GCI documents and we will not go into them in this report. The diagram on the previous page illustrates in summary the steps that together form the data synchronisation process. The essential result will be:

- Availability of the item and party data for everyone who has subscribed to the particular data on a global basis.
- A central entry point (registry) to ascertain uniqueness, but not a single point of failure, through
 a network of data pools that synchronise the
 requested data.
- Global visibility of products and parties through a search function.
- Enabling system-to-system integration from data source to data recipient through several solutions, depending on the services of the data pools.

• The data pool can be manufacturer based, retailer based or neither (governed by a third party).

For the context of the future state, we assume that this concept is fully deployed and that the ideal usage is through a systems-to-systems connection.

Adoption Rate and Levels

The adoption of all these standards certainly will not be achieved overnight. Different companies will adopt at a different pace and not all standards will be in place from the start. The business case presented in this report compensates for this through several adoption rates.

The ideal future state is defined by full adoption along several dimensions:

- The percentage of trading partners that are connected through GDS. This can of course vary from 0 percent to 100 percent, and even though the first 10 percent may account for the majority of the trading volume, a considerable reduction in mismatches and errors may come from the later adopters.
- The percentage of assortment/product groups that are covered through GDS. For a manufacturer, this will refer to the percentage of its assortment that is synchronised with its trading partners. For a retailer, it is the percentage of the assortment of the connected manufacturers that is synchronised.
- The percentage of financial volume that is covered through data synchronisation. For some benefits, this is a more relevant measure than the previous two. For example, when a small part of the assortment with a small set of manufacturers covers a large portion of the financial volume, this measure is particularly relevant.

- The percentage of attributes (including relation dependent) that are exchanged through GDS. The percentage of attributes needed to feed the recipient's system is another important adoption dimension. When the other attributes still need to be exchanged or added manually, the benefits will dwindle. The addition of price and other relation-specific data is an important success factor for Global Data Synchronisation.
- The percentage of integration that has taken place within your operating company. When there are still unnecessary human steps in the process, the benefits will not be optimal.
- The level of process integration that has taken place on the business partner's side. This may come into play when you consider the benefit of clean orders for a manufacturer. This clearly depends on the integration at the retailer end. It also applies to other business partners such as logistics service providers.
- The percentage of regional alignment of data standards within a multinational company. This adoption dimension comes into play when considering corporate benefits with regard to more efficient reporting and improved decision-making.

The next chapter of the report will assess the benefits in the ideal situation, where adoption along all dimensions is complete. In a later section, we will adjust the benefits for these adoption figures.

As we will see, it is often convenient to know not only your own current adoption stage and ambition, but also the adoption stage of your trading partner: The GCI-endorsed global scorecard can help here (www.globalscorecard.net).

Implications of Sunrise 2005

To provide for continued expansion of the product identification system and the inclusion of new companies in the future, the UCC has established a sunrise date for its membership to accept the 13-digit EAN-13 code as well as the U.P.C. at the point of sale no later than January 1, 2005. This will lead to a number of implications.

North American retailers should develop 13-digit scanning capabilities at the point of sale. Starting on January 1, 2005, products marked with EAN-13 symbols must be scannable at retail checkouts across the United States and Canada. There will no longer be a need for non-North American companies to relabel products marked with EAN symbols with a U.P.C. in order to sell in North America. The result will enable EAN and U.P.C. symbols to scan everywhere. The actual bar code itself will not change.

It's not a scanner issue, but rather a database issue. The vast majority of all scanners currently in use can already scan an EAN-13 symbol. The Sunrise 2005 date is about expanding databases so that companies can store the 13 digits encoded in an EAN-13 symbol and not just 12 digits. In most cases, scanners can easily be upgraded at little or no expense to scan the 13-digit EAN bar code.

To truly take advantage of the new tools, the industry should consider future expansion. GCI recommends expanding databases to 14 digits. This will enable retailers to accept next-generation bar codes such as Reduced Space Symbology (which encodes 14 digits) and use all of the standards and symbologies of the global EAN•UCC System.

The Sunrise 2005 initiative is not another Y2K. Checkout scanners will not seize up, computers won't crash, nor will entire systems fail after January 1, 2005. Companies that are not compliant may experience problems scanning the longer EAN-13 symbols, but commerce in North America will not be disrupted. Probably the biggest and most visible issue could be the inconvenience to the consumer. We encourage companies to address this issue sooner rather than later and expand their databases to handle 14-digit data structures. These efforts will be part of a continuing evolution toward a true globally harmonious system of trade.

Why Do It?

Implementation of GTIN, GLN and GDS standards will reduce inefficiencies in the supply chain, resulting in quantifiable benefits in areas such as catalogue maintenance, category and promotions management, order management, order fulfilment and corporate management. The standards will also contribute to improved sales performance by decreasing time-to-market and out-of-stocks.

Bridging the Gap Between the Current and Future States

From the overview of today's business practices described in the preceding current state section it is obvious that there is considerable inefficiency in the supply chain. Although many parties in the supply chain tend to work with their own internal automated information systems, information exchange between parties in the transaction process is still done manually to a great extent. And typical of manual involvement for tasks of this nature, they are time consuming and represent a source of errors. Given the general inefficiency of the current state, the question now is what specific benefits would be realised if companies bridge the gap between the current and future states. The answer is essential in order to provide the business rationale for implementing GTIN/GLN/GDS standards. In this chapter, we will present an overview of all potential benefits that can be expected.

Benefit Logic

The benefit assessment presented here was not done by simply listing benefits that came to mind or that were mentioned by industry members during our research. The impact of GTIN/GLN/GDS standards can be described as a set of cause-and-effect relationships, with the favourable effect being the end benefit. To ensure that we thoroughly understood how beneficial effects worked, during the course of our work we built such a set of cause-and-effect relationships, which we call the benefit logic. By taking this approach, we ensured that we not only understood and described the

beneficial effects, but also clarified relationships and interdependencies between benefits. Information on the detailed benefit logic, which serves as the methodological framework for the business case study, can be found online at www.cgey.com/GCIcase.

Business Case Model for Implementing GTIN/GLN/GDS

During our research with members of the industry, we built an understanding of current inefficiency and identified and defined potential business benefits from implementing GTIN/GLN/GDS standards. After this, we assessed how to make these benefits explicit. The findings of this work are processed in a spreadsheet, resulting in a generic model, which can be used to perform value assessments on an individual company level.

Here, we use this model to illustrate the benefits in a quantitative way where possible to provide an idea of magnitude and scope. Because we built a generic business case model and not an industry business case, the volume numbers used (number of shipments, purchase orders, invoices, etc.) are of an illustrative nature only. Therefore, they are by no means representative of an average for the industry or individual companies. On the other hand, parameters such as error rates and time spent on activities were collected during our research, and should provide an appropriate indication of the industry average. In our business case model, these parameter values are used as defaults, which can be customised where appropriate. The idea is that when

Global standards for item information formatting and exchange will mean a significant increase in the automation of product item information processing.

reviewing the benefits, readers should be able to scale them to get an idea of the benefit size for their individual companies.

Describing the benefits and illustrating them in a quantitative way as done below is the first step, but it only provides a snapshot of today. It focuses on the benefits likely to come from fixing current bottlenecks, thus assessing current value. Also, there is the implicit assumption that GTIN/GLN/GDS are in place and that there is full maturity, which, of course, must be put into perspective using the adoption levels discussed earlier. Later in this document we will revisit this issue – that is, the time dimension of the business case.

Benefits to the Consumer

Consumers will also benefit from global standards. For instance, availability and assortment will be improved, ensuring a satisfied consumer.

Safety of food is a major issue today. The traceability of products will improve through better product identification and more accurate product information. This will provide support for food safety initiatives.

Then there is the potential improvement to customer service: Store employees who are not busy fixing errors will have more time for assistance and service. And in the longer run, these standards will be of great value in the further development of concepts such as home shopping and self-scanning.

Understanding the Benefits:

Retailer Sellsmart and Manufacturer Makegood

To provide a tangible sense of the potential benefits, we have chosen to use the example of trading partners Retailer Sellsmart and Manufacturer Makegood, which are regional operating companies, part of global players in the industry. Annual revenues of Sellsmart are €1 billion, and annual revenues for Makegood are €500 million. Retailer Sellsmart sources approximately 10 percent of its order volume (or, 50,000 orders) with Manufacturer Makegood. This example is carried through the various business processes that will be impacted by implementation of GTIN/GLN/GDS.

Benefits From Implementing GTIN/GLN/GDS

In describing the benefits that can be expected from realising the future state as sketched earlier, it's important to track the same processes as identified in the current state.

Item Creation

During the first exchange of data between manufacturer and retailer, the priority for sales/account and category managers is to get the product in the stores as soon as possible, while those responsible for the product catalogue want quick and accurate recording of the item information. Global standards for item information formatting and exchange will mean a significant increase in the automation of product item information processing. This will reduce both the time spent and the errors made during this crucial phase of recording item information. As a consequence, the number of administrative hours spent on actual recording of item information will be reduced, the item data will be captured accurately and in less time. Due to this, lead time required for introducing a new product in the supply chain also will be reduced, resulting in improved speed-to-shelf.

Global data standards shared by retailers and their suppliers should eliminate the need for complicated, difficult-to-maintain cross-reference files.

Simplifying Recording Item Information

Today it takes Retailer Sellsmart 90 minutes to collect, key in and validate all relevant item information for each new product. With a global catalogue in place, uploading and validating the (accurate!) information will take no more than 10 minutes, saving as much as 80 minutes per new item. Now, our retailer may add as many as 100 new items from Manufacturer Makegood, but let's assume the total number of new items (from all manufacturers) per year is 2,000. For Retailer Sellsmart, this would mean freeing up a total of almost 2,700 man-hours in catalogue maintenance.

Improving Speed-to-Shelf

For Manufacturer Makegood and Retailer Sellsmart, benefits will be realised in the form of improved speed-to-shelf. Currently, 40 percent of Sellsmart's stores do not have the product on the shelf at the introduction date. The delay for these stores, caused by poor information exchange, is two weeks. Retailer Sellsmart currently always makes up for a quarter of this delayed volume (that is, 10 percent of total delayed volume). The envisioned reduction of product introduction lead time will mitigate this entirely. The average of total weekly projected sales for each new product is €20,000. Trading partners Sellsmart and Makegood jointly introduce 100 new items in the stores of Retailer Sellsmart each year. The total value of eliminating the delays in terms of additional retail sales would be €385,000. In addition to the direct sales effect, eliminating these delays also reduces potential stock build-up of the delayed volume at Manufacturer Makegood, and avoids the double advertising costs accompanying product introductions.

Sales and Sourcing

For manufacturers, global data synchronisation will mean simplified posting of item information in proprietary retailer catalogues, instead of having to publish this information in a one-on-one fashion. This will not only lead to an increase in product exposure in a variety of retail formats and locations – including small and medium-sized companies – but also to a reduction of valuable time spent by sales representatives in the process of publishing item information.

Reduced Involvement in Publishing Item Information

There are 30 sales/account managers on the staff of Manufacturer Makegood, who all spend on average 15 percent of their time on publishing (new) item information, which can be reduced to 5 percent with item synchronisation. This would mean freeing up 6,000 hours per year in this area that can be used to create a positive effect on product sales due to expanded retail exposure.

On the other hand, enhanced information availability and transparency will give retailers a global search capability. This, combined with global trading ability, will lead to opportunities to expand the supplier base – including small and medium-sized companies – and alternative sourcing. The result could be lower sourcing costs and/or an optimised product assortment (adding new items from new trading partners). In addition, simplified cross-regional trading might make it possible to review and potentially reduce the need for local intermediaries or distributors.

Catalogue Maintenance

Item synchronisation will eliminate manual key-in work and rework, and therefore will reduce time spent entering new items and updating existing items, as well as eliminate time spent on correcting item information in the product catalogue. Global data standards shared by retailers and their suppliers should also eliminate the need for complicated, difficult-to-maintain cross-reference files. The elimination of time spent creating and maintaining cross-reference files, in combination with reduced time spent on catalogue maintenance, will contribute to reducing the number of administrative man-hours.

Automated Updates and Catalogue Accuracy

Today the product catalogue of Retailer Sellsmart contains 20,000 items. Each year, 30 percent of the item attributes change, requiring 6,000 updates a year. Updating an item today on average takes 20 minutes, which can be reduced to five minutes. On an annual basis, this would save 1,500 administrative man-hours. In addition, current accuracy of

the catalogue of Sellsmart is only 85 percent, meaning that 3,000 items need corrections each year. Assuming that the average time needed to correct item information equals 20 minutes with a future accuracy rate of 98.5 percent, the potential savings due to improved accuracy would be 900 hours.

Category and Promotions Management

A key joint activity of manufacturers and retailers is organising product promotions, where the administrative element, in particular, can be a hassle. Automation of item information processing will reduce the lead time and therefore time spent by sales/account and category managers on product promotions.

Streamlined Product Promotions

Imagine that our trading partners Retailer Sellsmart and Manufacturer Makegood each spend a total of 12 manhours a week when preparing a product promotion. Lead time for product promotions is currently six to eight weeks, and the administrative process is perceived by both parties as a major bottleneck (as well as a pain in the neck!). By applying global item synchronisation, Sellsmart and Makegood will be able to reduce the lead time by two weeks. Now suppose that Sellsmart and Makegood jointly implement 200 promotions annually. This would mean they would each free up 4,800 valuable man-hours, including time spent by category managers and account managers.

A standardised format for item information will simplify the process of compiling and consolidating such information for categories, depending on which product sales information will become more readily available. This will ultimately reduce the time spent on category reporting, with the result of minimising time spent on management reporting overall.

Since this information is synchronised, the quality of commercial information will also be improved, not only in terms of integrity, but also due to the fact that additional information (queries) will become available. This is especially true when item information is also

synchronised with third parties such as market research agencies. Improved "commercial data production" will enable sales and category management to improve analysis and planning, contributing to improved stock planning and thus product availability.

Less Time-Consuming Category Reporting

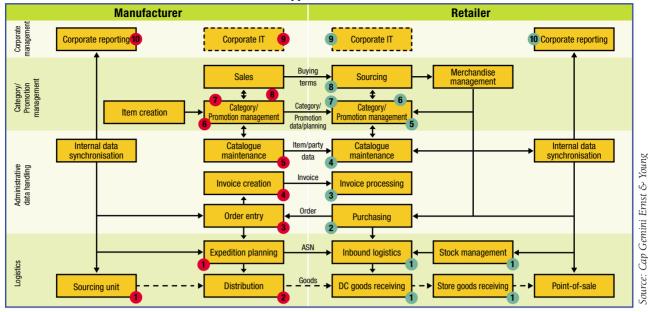
Both Retailer Sellsmart and Manufacturer Makegood each have a staff of 10 dedicated to compiling and – more important – verifying product sales and category information. Approximately half of their time is consumed by collecting, verifying and consolidating the appropriate data. Through the consistent use of GTINs, GLNs and product classification, it will be easier to consolidate information for reporting. In this way, the amount of time spent on reporting could be reduced to a maximum of 10 percent. For both trading partners, this would mean that their staff could spend 8,000 extra hours on additional analysis and reporting.

Order Management

As a consequence of item synchronisation, sales order quality will improve, since transaction information will be more accurate. For manufacturers, this will allow the sales order-handling process to be streamlined. Fewer order defects will mean less checking of information and/or inquiring with the trading partner. The effect will be a reduction of time spent on order handling, which contributes to minimising administrative man-hours. Also, for retailers, a reduction in defect orders will reduce the time spent on dealing with rejected orders, contributing to minimising the number of administrative man-hours.

In addition, fewer order defects will improve the retailer's fill rate, since the number of rejected or delayed orders will be reduced. This will contribute to maximising product availability, and thus contribute to maximised product sales.

Benefits Mapped to Processes



Improved Order Quality

Manufacturer Makegood receives 50,000 purchase orders per year from Retailer Sellsmart. On average, currently 4.5 percent of these contain errors and inaccurate data. The staffs of Sellsmart and Makegood jointly spend 40 additional minutes on these orders verifying, trying to repair, inquiring and reworking them. Let's assume data accuracy would reduce the error rate from 4.5 percent to 0.5 percent. This would then free up 675 man-hours at each trading partner.

Order Fulfilment

In the physical process, the benefits for the manufacturer are driven by the improved order quality. This results in several benefits in the order fulfilment process: reduced handling and cost of returned shipments, rush orders, accessorial charges and penalty charges for order fulfilment defects. Improved shortterm forecast accuracy increases the ability to optimise production scheduling, which in turn may allow a reduction in safety stock. Improved accuracy of picking lists and corresponding despatch advices or Advance Shipping Notices (ASNs) will maximise the number of perfect orders shipped, which will reduce penalty charges, reduce the number of returned shipments, and also allow retailers to receive more efficiently, driving a reduction in drop-off costs. Finally, global synchronisation of item information will enable flexibility in distribution network setup by reducing switching costs among third-party logistics providers.

Improving Order Fulfilment

Today Manufacturer Makegood is confronted with 1 percent returned shipments. Returned shipments require 30 minutes of handling. Besides handling time, average additional cost per return shipment (write-off, reconditioning, etc.) is €100. Let's say the rate of returned shipments is reduced by 90 percent to 0.1 percent. With an annual amount of 50,000 shipments, this would mean freeing up 225 man-hours in the warehouse and a cost savings of €45,000.

In 0.5 percent of the order deliveries, Manufacturer Makegood is charged a €100 penalty charge for order fulfilment defects. Reducing this to 0.1 percent is another potential cost savings of €23,000. Currently, 8 percent of Makegood's orders are rush orders that need to be expedited, which is 25 percent more expensive than regular shipping. Cutting back the 8 percent to 4 percent would lead to a 1 percent savings in total shipping costs.

A common data standard between manufacturers and transportation service providers will mean that location information will be consistent throughout the systems of both manufacturers and their carriers, which will enable simplified and improved tracking and tracing of shipments. Manufacturers will be able to reduce the time spent on order status requests, and this will contribute to minimising the number of customer service man-hours.

Receiving Shipments

The combination of an accurate product catalogue and accurate orders will drive streamlined product and shipment identification at the retailer's end of the physical flow. It will also drive a reduction in scanning errors upon receipt at the retailer, because what is delivered and scanned on receipt will match what was ordered. A reduction in receiving/scanning errors will drive numerous efficiencies in the retailer DC, the major impact of which will be potential reduction of safety stock and minimisation of DC man-hours for receiving. With data synchronisation, there will also be a decrease in unidentified shipments. This will save administrative man-hours and will avoid stock build-up and excess stock.

Global synchronisation of location data between retailers and transportation service providers will also have a positive impact. Accurate, timely location information can lead to sourcing from optimal shipping locations, which will reduce delivery time and distance. The result will be a minimisation of transportation costs and a reduction of store out-of-stocks.

Overview of Benefits for Manufacturer and Retailer*

| | Manufacturer | Retailer |
|----------------------------------|--|--|
| Corporate management | Simplified corporate reporting (D) Expand geographic retailer base (I) Eliminate IT system redundancy (I) Opportunity for shared service creation (I) | Simplified corporate reporting (D) Enable global sourcing (I) Corporate transparency/sales synergy (I) Eliminate IT system redundancy (I) Opportunity for shared service creation (I) |
| Category/Promotion management | Improve visibility/stock level planning (I) Product posting/maximise retail exposure (I) Reduce time spent on complaints/disputes (D) Simplified and enhanced category reporting (D) Reduce product introduction lead time (D) Reduce product promotion lead time (D) | Reduce need for local agents/intermediation (I) Expand supplier base (I) Corporate sourcing price transparency (I) Improve visibility/stock-level planning (I) Reduce time spent on complaints/disputes (D) Simplified and enhanced category reporting (D) Reduce product introduction lead time (D) Reduce product promotion lead time (D) |
| Administrative data handling | Eliminate need for cross-reference tables (D) Fewer invoice disputes (D) Fewer write-offs (D) Reduce accounts receivable (I) Fewer sales order defects (D) | Less catalogue maintenance (D) Eliminate need for cross-reference tables (D) Fewer invoice disputes (D) Fewer order defects (D) Improved fill rate (I) |
| Logistics | Simplified order tracking and tracing (I) Fewer return shipments (D) Improved rate of perfect orders (D) Fewer emergency orders (D) More accurate picking (D) Optimised short-term planning (I) | Error-free shipment receiving (D) Fewer return shipments (D) Fewer backorders (D) Less excess/safety stock (I) Optimised location despatch (I) |

Improved Product Identification

Retailer Sellsmart currently has a scanning error rate of 2 percent at DC receiving and store backdoor (in the case of direct store delivery). Ten percent of shipments are direct store deliveries. One percent of shipments ultimately cannot be identified. Average delays due to scanning problems (trying to scan, alternative identification) are 10 minutes. Unidentifiable shipments require an additional 15 minutes. Let's assume the percentages of scanning errors and unidentified shipments are reduced by 90 percent to respectively 0.2 and 0.1 percent. Considering only Sellsmart's trading volume with Makegood, the annual savings would be 290 man-hours.

Invoicing

Improved accuracy of transaction information results in more accurate invoices, and consequently a reduced number of invoice mismatches. This will mean a reduction of total time spent on solving invoice mismatches, which will contribute to minimising the number of administrative man-hours for manufacturers and retailers. However, the extent of reduction of invoice mismatches depends on the attribute set being synchronised. Therefore, certainly in the early phase of item synchronisation not all invoice disputes are subject to elimination by data synchronisation. Disputes on promotional prices, when not covered in the synchronised set of attributes, will remain.

For manufacturers, fewer invoice mismatches will also contribute to improved on-time payment of outstanding invoices, which will reduce the manufacturer's accounts receivable. A further benefit of a reduction in invoice mismatches for manufacturers is a reduction in invoice write-offs that occur as a result of invoice disputes.

Less Time Spent on Disputes

In talking to each other, the staffs of both Retailer Sellsmart and Manufacturer Makegood spend 45 minutes on each disputed invoice. On a yearly basis, Sellsmart receives 50,000 invoices, of which 25 percent do not match. Manufacturer Makegood writes off 40 percent of the disputed invoices right away since the variance is within a set margin, and 85 percent of the remaining disputes are about promotional pricing. This leaves 11,250 mismatched invoices, representing 844 man-hours for each trading partner that would be eliminated in the case of item synchronisation.

Corporate IT and Reporting

Aligning data across operating companies and harmonising processes will create opportunities for both manufacturers and retailers to share relevant IT systems on a corporate level. Such common platforms and a reduced number of IT solutions would enable companies to achieve synergy on a corporate level due to

*Note: "D" and "I" indicate whether the specific benefit should be judged as direct or indirect. Direct benefits are more explicit and relatively easy to quantify. Indirect benefits generally have a larger potential value, but the size is harder to quantify and must be assessed or "guestimated." The numbers correspond to the numbers on the diagram on the facing page.

standardised applications. Savings will come from shared operating, development, maintenance and training activities. This will be of benefit to smaller companies as well.

Standardised information formats and procedures that will come with item synchronisation will make it possible to converge to common processes within the company on a global scale. From there, the next step could be the creation of shared services, offering more opportunities for synergy and a reduction in general and administrative costs.

Furthermore, internal item alignment will simplify consolidation of data, which will reduce the time spent on corporate reporting, contributing to minimising the number of administrative man-hours. It will also allow more timely availability and higher quality of sales information, which enables enhanced corporate reporting and analysis. This in turn contributes to creating sales synergies in existing markets.

Less Time-Consuming Corporate Reporting

The corporate head offices of Retailer Sellsmart and Manufacturer Makegood have a staff of five dedicated to compiling and – again, more important – verifying product sales and category information. Half of their time is consumed by collecting, verifying and consolidating the appropriate data. With a standardised format for item information, the amount of time spent on this could be reduced to a maximum of 10 percent. For both trading partners this would mean that their staff could spend this saved 4,000 hours on additional analysis and reporting.

For retailers, shared global data standards with suppliers can also contribute to cross-regional information transparency, which in turn can play a significant role in enabling retailers to perform global sourcing. Retailers will be able to consolidate buying power across the globe, leading to a minimisation of sourcing costs.

For manufacturers, shared global data standards with retailers can also contribute to eliminating cross-regional trading barriers that are in place today, significantly lowering barriers to entry into new geographic markets. The result is an improved ability to develop new geographic markets.

Benefits for Retailer Sellsmart and Manufacturer Makegood

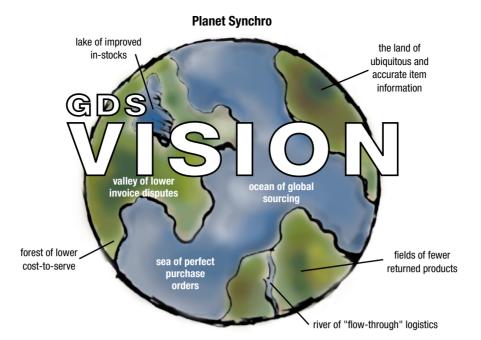
In this simple and high-level case example of Retailer Sellsmart and Manufacturer Makegood, the trading partners realised substantial benefits. Based on this particular trading relationship with Manufacturer Makegood, Retailer Sellsmart freed up more than 22,000 man-hours per year (at €25 per hour, representing a value of almost €555,000), reduced out-of-pocket costs by €100,000 and saw €385,000 in additional sales volume. Manufacturer Makegood saved more than 24,000 man-hours per year (at €25 per hour, representing a value of more than €610,000). In addition, it reduced out-of-pocket costs by €68,000, designated shipping costs to Retailer Sellsmart by 1 percent and saw €385,000 in additional retail sales of its products.

While an example such as this has limitations, it is an effective way to get the message across. Since we were careful not to overstate the benefits – in fact, we restricted ourselves to quantifying in a cautious way, excluding benefits that really require company-specific data – it is our belief that the example presented provides a fair idea of the magnitude and scope of potential benefits. And as indicated previously, the example should provide a guide as to how to apply the model to your own company's situation.

Benefits Overview

Impact on Cash Flows

As we saw, many of the benefits are about saving time spent on redundant activities. It can therefore be argued whether such benefits are "real" benefits, since they do not represent cash flows. When doing a company-specific assessment, it is important to address



this and determine such benefits in a payback case. To determine this will depend on how certain variable costs are looked upon in a company. Man-hour reductions in a DC or warehouse, for instance, could be translated into cash flows because less temporary work is needed during peak times. Hours for category managers and sales managers, however, are in most cases not variable, but should lead to additional sales and thus cash. The judgement call regarding the value of saved man-hours is really a company-specific issue.

Impact on Processes

Going back to the process map that was introduced in the earlier current state section, we can map the benefits in order to get an overview of the impact of GTIN/GLN/GDS standards (see charts on pages 26 and 27). It can be concluded that many process steps at all levels are affected. In the logistics area, both trading parties benefit in their own way. For the manufacturer, the order accuracy brings efficiency, streamlining the order fulfilment process and reducing the manufacturer's cost related to non-quality orders. In addition to improved interoperability with the retailer, GTIN/GLN/GDS also enables the manufacturer to work more efficiently with carriers. For the retailer, the improved accuracy of data in turn improves the process of shipment receiving, doing away with costs that come with errors in this area. This could prove to contribute significantly to streamlined logistics operations.

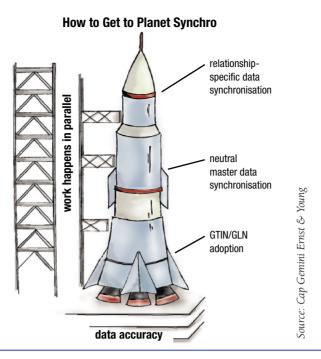
In the area of administrative data handling, retailers and manufacturers benefit more or less in the same way from improved efficiency. We can truly speak of mutual benefits in this area, where the benefits are driven by automation of data handling, ensuring accuracy of transaction information.

For both manufacturers and retailers, data accuracy, in combination with availability and easy consolidation generates significant value in the area of category management. Here, it is not only about exchanging the right information in an efficient way, but also about the availability of quality information for business planning and analysis. These opportunities for enhanced business planning have the potential to contribute to business development. And in this respect a larger reach toward (potential) partners in the supply chain, including small and medium-sized companies, also must be taken into account. Finally, on the corporate level, consistency in formats and processes creates efficiency and opportunities for synergy for both retailers and manufacturers.

Source: Cap Gemini Ernst & Young

"Planet Synchro"

In conclusion, we can state that there is much to be gained by bridging the gap between the current state and future state as described. Retailer and manufacturer processes are affected at all levels in a number of ways. Benefits from GTIN/GLN/GDS standards are not only about cost cutting. It's true that time and therefore money is driven out of the supply chain to the benefit of all trading partners. But GTIN/GLN/GDS standards will also contribute to improved sales performance by decreasing time-to-market and out-of-stocks. And finally, it's not only global players that benefit from global standards. Trading partners of all sizes benefit from increased reach and synchronisation. Yes, "Planet Synchro" seems a worthwhile destination. The next step is to prepare for the trip.



What Is Needed?

Achieving data synchronisation requires a multistage approach with attendant implementation costs that will vary depending on factors such as current IT landscape, current usage of standards, degree of centralisation and level of ambition.

Taking the vision from the previous section, we now must ask ourselves: "How do we get to Planet Synchro?" The rocket that is needed to get there consists of several elements:

- We must implement the usage of GTINs and the corresponding elements of the GDD (Global Data Dictionary) to make our company ready for sending or receiving the item data.
- We must implement GLNs to (at least) enable the identification of parties through GLN. This is a prerequisite for GDS, as it is used to identify the data owner and the authorised data recipient.
- The first step of GDS is the synchronisation of neutral master data, information that is the same for all parties involved.
- The second step of GDS is the synchronisation of relationship-specific data, such as price and logistics details. This is an extra step that makes the item synchronisation complete, and it will significantly drive the benefits. Just as with a real rocket, you need to have this last booster stage in place in order to get to Planet Synchro.

All these elements can be worked on in parallel, they can even be tested in parallel, but eventually they need to be assembled and work in combination. The stable platform of accurate data is an absolute necessity to make this journey a success.

The implementation costs of this rocket will form the other side of the business case. In this section, we identify the overall steps that need to take place to implement GTIN/GLN/GDS. The implementation steps

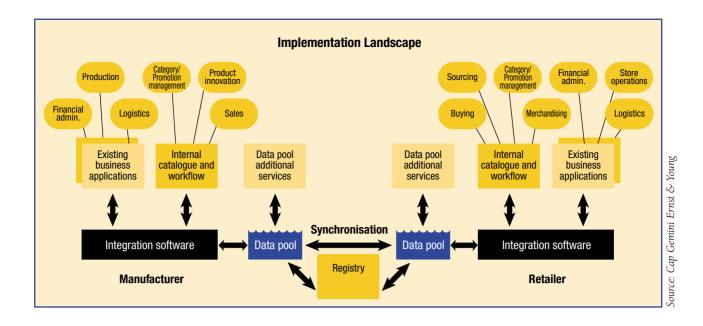
then identify the buckets that make up the cost side of the business case.

The size of these cost buckets will vary widely from one organisation to another, depending on factors such as:

- Current IT landscape: Is there a common platform shared among the different operating companies; or is the IT still fragmented as a result of several mergers and acquisitions?
- Current usage of standards: Is there a corporate data model, and is it maintained and implemented consistently? How advanced is the usage of EDI messages, such as orders and Advance Shipping Notices (despatch advices)?
- What costs will be taken as a central investment, what will be seen as operating company investments? How centralised will the operation eventually be, will the project be centrally governed or will each decentralised implementation be on its own?
- What will be the ambition level of the implementation? As we will see, there are several scenarios for each step of the implementation, and the implementation costs (as well as the expected benefits) will vary depending on the chosen scenario.

Implementation Landscape

Let's start to look at the implementation context: What will be changed when GDS is implemented? We need to go back to the impact on the retailer and manufacturer processes to see what processes can be supported by this GDS solution.



Looking at the chart above, we see, from left to right, the different elements of the implementation that will exchange the item information from the manufacturer to the retailer and the party information both ways.

The **existing business applications** at the manufacturer will still link the information to production, logistics and financial administration. Some of these applications may also be the source of the item information. Because this information can be distributed over many applications, there may be a good reason to centralise this information in an internal catalogue and couple the item maintenance workflow to this application. This **internal catalogue** can already exist or this may be a good opportunity to implement it.

The different applications are typically linked through existing **integration software**. This can either be an EDI environment or a more recent Enterprise Application Integration (EAI) implementation. Through this integration software, the internal systems are also linked to the external data pool. In some situations, the **data pool** may be privately owned by the manufacturer, but more often it will be a third party.

The third party offers its own **additional services** that may be of help to any party in the supply chain. For example, these can be a Web interface to the data pool information for querying or even for maintenance of (smaller) catalogues.

As explained by the GDS document, the data pools are linked to each other and to the central **registry**. This data pool provides the single point of entry and the registry indexes the data pools to identify the unique source for each piece of data. Together with the data pool this forms a stable network of data providers.

The data is then passed on to the retailer through a similar link of **integration software**. At the retailer, there typically is an **internal catalogue** to store the data and add retailer-specific data. To make optimal use of the GDS implementation, some of this data may be moved to a more central platform. From this cata-

logue, information is then further disseminated to other **existing business applications** that make it available to logistics and store operations.

Implementation Steps for a Manufacturer

Both the manufacturer and the retailer need to implement GTIN, GLN and GDS. The sequence is not arbitrary: GTIN and GLN must be available before GDS can be implemented. However, the level of implementation can be moderate at first and be increased over time.

The graphic on the following page provides a brief overview of the different implementation projects. A more detailed overview of the activities for all architecture layers and phases is used in the business case model to refine the cost side of the equation.

GTIN Implementation

GTIN implementation for a manufacturer in this context can also be described as "getting ready for data synchronisation." Included here are all activities necessary to have the item information GDD-compliant and ready to be exchanged with third parties.

Choices – The different choices that can be made along the way include the following:

- Will you centralise the GTIN assignment process to enable a more consistent assignment and less duplication?
- Will you build an internal database, or will the data stay in the current legacy systems (or use the existing database)?
- Will you integrate the database with the current systems to improve data accuracy and better control the process, or will it be maintained through the existing procedures?
- Will you add the GTIN as an additional identifier in your systems, or map the GTIN to the internal identification code using a translation table?

| | | Overview of Implementation Activities for a Manufacturer | | |
|------|---|---|--|--|
| | Current state assessment | Strategy & planning | Implementation | Rollout |
| QTIN | Map GDD requirements against data model and assess data accuracy Analyse GTIN maintenance process and data owners Analyse current application on GTIN compliance | Design future GTIN assignment process and data owners Design changes to applications Design data mapping to GDD Plan data cleansing | Implementation changes to applications Implement new assignment process Execute data cleansing | Align this process throughout the organisation Improve data analysis and reporting toward corporate |
| GLN | Analyse current location identifiers Analyse current location maintenance process Analyse current applications on location identification | Define scope of GLN implementation Design GLN assignment process Design changes to applications | Implement new assignment process Implement changes to applications Migrate data | Rollout by regionRollout by customer |
| GDS | Analyse current item/party info communication Analyse roles and responsibilities | Design future item/party synch process Design infrastructure and security for connection to data pool Design changes to applications to facilitate synchronisation process Select data pool | Implement synchronisation and communication process Implement changes to applications Implement connection to data pool and security | Register own GTINs Per customer: Receive customer GLN Authorise publication Test total process up to authorisation by the customer |

- Will you include the communication to other parties (such as logistics service providers and marketing information companies) through GTIN and using the GDD standard?
- Will you include the internal alignment of item information between operating companies to improve corporate reporting, create better visibility and improve decision-making?

Process – During the GTIN assessment phase, the GDD requirements and GTIN application rules are compared with the existing processes. Potential problems with assignment of GTINs to all levels of the packaging hierarchy are assessed and the data owners are identified, together with their GLNs. Depending on the choices that were made, during the GTIN planning phase you will design the solution for all architecture levels (infrastructure, data, application, processes and perhaps even organisation). The design will be limited to your own processes and will be based on the proposed standards (those are not open to redesign). These changes are then realised during the implementation phase.

Moving to this new GDD-compliant data structure will typically require a substantial effort in data cleansing. All existing data needs to be brought to the quality standard required for external synchronisation and it should be maintained at that level. This requires a true effort in defining roles and responsibilities with regard to this data and significant time spent searching through the data and making corrections where needed.

The overall effort will depend very much on the current situation and ambition level of the manufacturer toward data synchronisation. There is, however, a minimum requirement to provide the right level of data accuracy. Synchronising bad data, or engaging in a big manual effort to provide the data will not lead to real improvement. Therefore, a single thorough approach, phased over the different regions and product groups is recommended. The Sunrise 2005 date will certainly drive the adoption of GTINs for North America.

GLN Implementation

GLN implementation for a manufacturer in this context means "getting ready for party synchronisation." This means that the GLN codes are set up to identify the sending/receiving parties for GDS as well as the necessary location codes to fulfil the need of the retailers for your location information through GDS. This last step is not essential for the usage of GDS, but can be seen as a subsequent ambition level with regard to GLN. The additional benefits will come from the enabling of Simpl_EB messages.

Source: Cap Gemini Ernst & Young

Choices – The different choices that can be made along the way include the following:

- Will you add the GLN field to your existing records, or will you cross-reference the GLN number with your internal number?
- Will you set up a more centralised GLN assignment process?
- What will be the scope of the GLNs that will be fed to the data pool?
- What GLNs (and corresponding party information) will you expect in return?

Process – During the GLN assessment phase, the existing location identifiers and their maintenance process are documented. The planning phase will design the future solution based on this assessment and the choices made in the list above. Implementation consists then of the realisation of the GLN assignment process, the changes to the item master to include the GLN and the changes to the applications that make use of this field. The rollout strategy can then be by region and by customer.

Although GLNs can be assigned to every location up to, for example, individual buyers or loading docks, the general assumption is that common usage (externally) will be limited first to the DC level. As a followon to the introduction of GLNs, the automated transactions that refer to these locations (e.g., orders and

Advance Shipping Notices) should also be adjusted. This leads us to Simpl_EB concepts (see Appendix) that are not included in the scope of this business case.

GDS Implementation

When GTIN and GLN are implemented as described above, the remaining work for GDS implementation is to connect to the outside world and synchronise the data.

Choices – The different choices that can be made with regard to GDS include the following:

- Will you implement your own data pool, or will you connect to an external data pool?
- When connecting to an external data pool, will that be the same data pool for all operating companies, or can different operating companies connect to different data pools?
- How much of the existing data communication can be taken over by the automated process? For example, how will the retailers accept the changes, and how is this captured in the manufacturer systems?

Process – During the assessment phase, the existing item/party information exchange with the retailers is documented and from this, the future process is designed. This will describe the roles and responsibilities of the category manager, sales rep and others with regard to this process.

The new process and supporting application is then designed. The changes to the infrastructure and the mapping of the GDD attributes to the internal attributes (already done during the GTIN implementation) must now be implemented in the integration software.

The choice of having your own data pool or connecting to a third-party data pool determines the interface that must be established. When building your own data pool, the external communication is with other data pools and the registry through the XML messages

that are designed as part of the GDS protocol. When connecting to an external data pool, this interface depends on what the data pool can handle. It could be through EDI messages or other message types.

After implementation, the final step is the set-up of the information, typically per customer. First, the GTINs must be registered. After that, the necessary GLNs must be gathered from the customers. Then the item information can be fed to the data pool. The whole process up to the acceptance by the retailer will be rolled out by region and by customer (and perhaps even by product group). There will be additions to this process for extra attributes and relation-specific data, so it will be an ongoing improvement.

Implementation Steps for a Retailer

The implementation steps for a retailer can be captured in a similar fashion. Again, GTIN and GLN implementation come before GDS implementation. The choices are slightly different, but all in all, the same steps must be taken (see graphic, following page).

GTIN Implementation

GTIN implementation for a retailer in this context can also be described as "getting ready for data synchronisation." This means that all activities necessary to have the item information GDD-compliant and ready to be exchanged with third parties must be included here.

Choices – The different choices that can be made along the way include the following:

- Will you build an internal database to maintain the data more centrally (or reuse the existing internal catalogue)?
- Will you integrate this database with the current systems to improve data synchronisation, or will the data be maintained through the existing procedures?
- Will you add the GTIN as an additional identifier in your systems, or map the GTIN to the internal identification code using a translation table?

| | Overview of Implementation Activities for a Retailer | | | | | |
|------|---|---|--|---|--|--|
| | Current state assessment | Strategy & planning | Implementation | Rollout | | |
| QTIN | Map GDD requirements against data model and assess data accuracy Analyse GTIN maintenance process and data owners Analyse current application on GTIN compliance | Design future GTIN assignment process and data owners Design changes to applications Design data mapping to GDD Plan data cleansing | Implement changes to applications Implement new assignment process Execute data cleansing | Align this process throughout the organisation Improve data analysis and reporting toward corporate | | |
| GLN | Analyse current location identifiers Analyse current location maintenance process Analyse current applications on location identification | Define scope of GLN implementation Design GLN assignment process Design changes to applications | Implement new assignment process Implement changes to applications Migrate data | Rollout by regionRollout by supplier | | |
| CDS | Analyse current item/party info exchange Analyse roles and responsibilities | Design future item/party synch process Design infrastructure and security for connection to data pool Design changes to applications to facilitate synchronisation process Select data pool | Implement synchronisation and authorisation process Implement changes to applications Implement connection to data pool and security | Publish own GLNs Per supplier: Subscribe to items Receive items Authorise changes | | |

- Will you include the communication to other parties (such as logistics service providers and marketing information companies) through GTIN and using the GDD standard?
- Will you include the internal alignment of item information between operating companies to improve corporate reporting, create better visibility and improve decision-making?

Process – During the GTIN assessment phase, the GDD requirements and GTIN application rules are compared with the existing processes. Potential application problems are assessed and the data maintenance process is documented.

Depending on the choices that were made in the list above, during the GTIN planning phase you will design the solution for all architecture levels (infrastructure, data, application, processes and perhaps even organisation). These changes are then realised during the implementation phase.

It may come as a surprise that data cleansing is also needed to a certain degree on the retailer side. To get ready for data synchronisation, retailers need to have an up-to-date version of the item information in their database, or they simply will not know whether to accept or reject the first set of item data from the manufacturer. This data cleansing will still require a substantial amount of work, especially if the retailer does not know the right value of many attributes.

The overall effort will depend on the current situation and ambition level of the retailer toward data synchronisation. The true benefit will come from better availability of this data throughout the organisation, so special attention must be given to the integration with other systems.

Another motivation for GTIN adoption in North America will be the Sunrise 2005 date.

GLN Implementation

GLN implementation for a retailer in this context again means "getting ready for party synchronisation." This means that the GLN codes are set up to identify the sending/receiving parties for GDS as well as all the necessary location codes to fulfil the need of the manufacturer for your location information through GDS. Again, this last step is not essential for the usage of GDS, but can be seen as a subsequent ambition level with regard to GLN. The additional benefits will come from the enabling of Simpl_EB messages.

Choices – The different choices that can be made include the following:

- Will you add the GLN field to your existing records, or will you cross-reference the GLN number with your internal number?
- Will you set up a more centralised GLN assignment process?
- What will be the scope of the GLNs (how many locations?) that will be fed to the data pool?
- What GLNs (and corresponding party information) will you expect in return?

Process – During the GLN assessment phase, the existing location identifiers and their maintenance process are documented. The planning phase will design the future solution based on this assessment and the choices made in the list above. Implementation consists then of the realisation of the GLN assignment process, the changes to the item master to include the GLN and the changes to the applications that make use of this field. The rollout strategy can then be by region and by supplier.

Although GLNs can be assigned to every location up to, for example, individual buyers or loading docks, the general assumption is that common usage (externally) will be first limited to the DC level. As a follow-on to the introduction of GLNs, the automated transactions that refer to these locations (e.g., orders and Advance

Source: Cap Gemini Ernst & Young

Shipping Notices) should also be adjusted. This leads us to Simpl_EB concepts (see Appendix) that are not included in the scope of this business case.

There currently is no such thing as a "sunrise" date for GLNs. The need for GDS can accelerate this adoption process, but a similar sunrise goal could certainly help.

GDS Implementation

When GTIN and GLN are implemented as described above, the remaining work for GDS implementation is to connect to the outside world and synchronise the data.

Choices – The different choices that can be made with regard to GDS include the following:

- Will you implement your own data pool, or will you connect to an external data pool?
- When connecting to an external data pool, will this connection be made at corporate level, or can different operating companies connect to different data pools?
- How much of the existing data communication can be taken over by the automated process? For example, how will retailers recognise new items? Will the retailers themselves subscribe to these items, or will the manufacturer do that in certain cases?

Process – During the assessment phase, the existing item/party information exchange with the manufacturers is documented and from this, the future process is designed. This will describe the roles and responsibilities of the category manager, buyer and others with regard to this process.

The new process and supporting application is then designed. The changes to the infrastructure and the mapping of the GDD attributes to the internal attributes (already done during the GTIN implementation) must now be implemented in the integration software.

The choice of having your own data pool or connecting to a third-party data pool determines the interface

that must be established. When building your own data pool, the external communication is with other data pools and the registry through the XML messages that are designed as part of the GDS protocol. When connecting to an external data pool, this interface depends on what the data pool can handle. It could be through EDI messages or other message types.

After implementation, the final step is the set-up of the information, typically per manufacturer. First, the GLNs must be registered. After that, the necessary subscriptions to the GTINs need to be added. Then the item information can be gathered through the data pool. The whole process up to the acceptance by the retailer will be rolled out by region and by supplier (and perhaps even by product group). There will be additions to this process for extra attributes and relation-specific data, so it will be an ongoing improvement.

Implementation Scenarios

As mentioned in the beginning of this section, the total implementation costs can vary considerably, depending on the current situation and ambition regarding data synchronisation. This means that at the low end of the implementation costs spectrum we find an operating company with the following characteristics:

- The operating company is part of a well-organised multinational and the implementation activities are coordinated centrally to improve reuse of the implementation techniques.
- The operating company has a well-documented and maintained modern system with a consistent data model.
- The operating company has an existing catalogue or repository that serves as a staging or receiving database for the item and party information.
- The infrastructure to integrate external data with existing systems is in place through previous experience with EDI and perhaps XML messages.

 The data synchronisation approach is adopted by many operating companies in this multinational, enabling efficient sharing of the data pool and other licensing costs

Under these ideal (and possible) circumstances, the total implementation costs could stay below 1 million euros or dollars. It is easy, however, to design circumstances where implementation can take a threefold or fourfold investment. In these situations, it is likely that implementation is staged. The final solution will not be reached in one project. The way this is done will depend on the company in question, but one can think of some of the following choices with regard to GTIN/GLN/GDS implementation:

 Building a cross-reference table to the existing systems for GTINs and GLNs. Adding the items to the existing applications will then be a later step.

- Implementing data synchronisation "at the door" and not integrating the data directly into the existing systems. This will again be a later step.
- For smaller retailers and manufacturers, a browser interface to the data pool can be used to upload or receive their data.

In all these situations, the benefits will of course be reduced, as many of the human steps may not directly be taken out of the process. The potential benefit will typically be bigger eventually, but it is more a matter of getting there through several steps.

It should also be stressed that with these phased implementation projects companies should still keep a keen eye on data accuracy, as this is a cornerstone for acceptance and effectiveness of the data synchronisation process.

Real-World Global Standards: Air Traffic Control

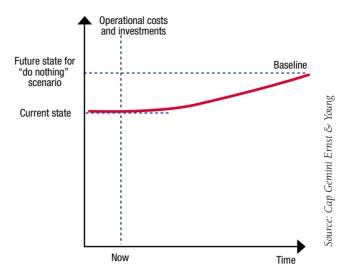
Air traffic control works the same way across the globe. Even ground control at the different airports around the world works with the same language and set of protocols. This way, pilots can switch from one control point to another effortlessly. It is the safest and most effective way to manage so many different planes. This set of protocols is designed to be the same anywhere across the world. The air traffic control industry could no longer handle different sets of localised protocols and languages.

Countries are collaborating to improve standardisation within the aviation industry as part of the ICAO (International Civil Aviation Organization). The first convention on international aviation was signed in 1944, and the ICAO has since worked on improving the collaboration among the countries on many different topics. Many of the regulations are produced by the Joint Aviation Association (JAA). They publish the protocols for things such as air traffic control in their JARs (Joint Aviation Regulations). Most countries follow these JARs and are part of the ICAO.

The current debate is about centralising the air traffic control services across Europe to make international travel easier and faster. The different countries still have to communicate closely to agree on a flight plan, and much of this could be done on a more central level, especially because the international and local flights can be separated vertically in air space. We can see that standardisation can lead to further centralisation (and the debate that this raises). At the same time, we note that many of the smaller countries are not able to fully comply with all these regulations. To communicate with these countries, airlines have to adopt to local standards or (in the absence of any ground stations) do their own traffic control on a pilot-to-pilot basis.

It is interesting to see the analogy with GTINs and GLNs: Air traffic control constantly needs to know what plane (GTIN) is where (GLN) and where that plane is going (GLN). The need for data accuracy is also clear, as the results can be disastrous when there is an error. Adoption needs to be 100 percent!

Development of Operational Costs When Doing Nothing



What If ...?

To complete the understanding of the business case for GTIN/GLN/GDS and put it into the proper perspective, it is important to investigate the alternative scenarios.

Comparing Alternative Scenarios Over Time

In the previous sections, we took a look at the current state and imagined a future state being in place overnight. By doing so, we ignored the element of time. Obviously, the future state will take time to become reality, and there are several alternatives to global standards. Taking the element of time into consideration, this chapter investigates some of these alternative scenarios that need to be considered in order to complete our understanding of the business case for GTIN/GLN/GDS standards and put it into the proper perspective.

Baseline Scenario

Building a business case is all about future value. Assessing the beneficial effect of fixing bottlenecks and inefficiency in the current state, however valid and necessary a first step, will only provide a snapshot of today. In order to factor future value created into our decisions, it is necessary to construct a point of reference: a baseline, or, what if I "do nothing?"

In the current state, there is a significant level of inefficiency in the supply chain. In a global scenario with increasing cross-regional trade with no global standards in place, today's bottlenecks (and related costs) will probably increase. More cross-regional trading relationships would mean an increased exchange of trading information in more "business dialects." One can argue whether the cost of inefficiency would grow disproportionately due to non-compliance. It is not within our reach or scope to provide a solid answer to

this, but it seems fair to assume that the cost of inefficiency will grow at least proportionately with cross-regional trade volume. As we saw in the IMF Global Economic Outlook, this could be as much as 6 percent or 7 percent. Therefore, in this business case it is important to realise that apart from the value of fixing current inefficiency, significant value will come from minimising, and if possible preventing, future bottlenecks and the growing costs of non-compliance.

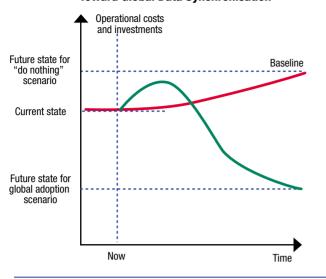
The development of operational costs in a "do nothing" scenario, which is the baseline for the business case, is schematically represented in the graph above.

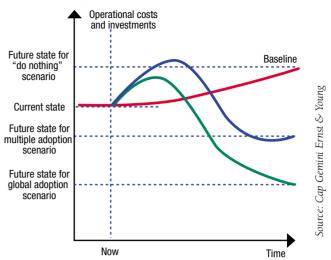
The Costs of Doing Business Without a Global Language

Think about our earlier analogy of global international English. Suppose we did not have international English and you had to deal with three or four phone calls from French trading partners - an inconvenience you learn to deal with by asking your competent and friendly colleague to translate for you. It takes some time, but it works. The "costs" of not having international English available are limited. Yes, it would be nice to learn to speak French, but perhaps not worth the effort. However, as your company becomes more global, tomorrow you may very well have to deal with 10 calls in several different languages. Consider how the costs of not having a common international language would weigh on your business and increase exponentially over time.

Baseline and Adoption Curve Toward Global Data Synchronisation

Baseline and Adoption Curves for Global Data Synchronisation and Multiple Local Data Synchronisation





Adoption Toward Global Data Synchronisation

Finalising the business case, we need to compare the baseline with a scenario where global standards will be adopted. How will costs of operation develop in this case? To what extend will they be mitigated? This will be driven by the rate of adoption of the GTIN/GLN/GDS standards. By adoption we mean the level of maturity on the axes presented at the end of the "What Will Change?" chapter (page 20). Up to now, we assumed that the future state (and thus full benefit potential) would be realised overnight. The rate of adoption is obviously something about which we can only make assumptions, but it's clear that rapid adoption will create the most value in the supply chain.

In the graph above left ("Baseline and Adoption Curve Toward Global Data Synchronisation"), the reduction of operational costs (green line) is driven by the adoption of GTIN/GLN/GDS standards. In this best-case scenario, global standards are widely adopted, which will create the critical mass necessary to achieve success and create value. Initially, the cost will be higher compared with the "do nothing" scenario due to investments made in implementation. However, over the course of time more and more inefficiency is driven out of the supply chain, as adoption levels increase. The faster the rate of adoption in the industry, the steeper the drop in the green line. The area between the baseline and the global standard line represents total value created by implementation. As we have seen in the section about the adoption dimensions and levels, some of these dimensions can be influenced by the company under consideration (such as internal alignment within a company), and for other dimensions, we need the collaboration of the trading partner.

Multiple (Local) Implementations

A realistic, but not optimal scenario is the case of multiple implementations of data synchronisation within one company. This scenario is represented in the graph above right. ("Baseline and Adoption Curves for Global Data Synchronisation and Multiple Local Data Synchronisation") by the blue line. In comparison to the global standards scenario, investment costs will be relatively high since investment will be fragmented. In addition, since adoption is also fragmented and the solution not optimal, the magnitude of savings will remain less than in the global standard scenario, where inefficiency is almost totally driven out of the supply chain. One can even foresee a situation where the growth of cross-regional trade increases the operational costs again, as the multiple local implementations do not cover these costs. Inefficiencies rise again, and the result will not be much better than where we are today.

Other Considerations

The alternative scenarios provide a tool to address questions from your organisation regarding the right approach for data synchronisation. There are, however, additional considerations and "tough questions" that should be addressed in this context, including the following:

The Broader Spectrum

GTIN/GLN/GDS seems a case in itself, but is that really true? Will GDS drive me to more and more adaptations to my process to accommodate the global process? What is the relationship with Sunrise 2005? Can I do one without the other?

All these questions are valid, and the interdependence with other improvements in the supply chain exists. We have identified GTIN/GLN/GDS as the first attainable "island of stability" in this ongoing change to global trading communication standards (see the chapter titled "Why a Global Approach to Standards?"). It's clear that the path is forked and several tracks can be followed. The interdependencies with Sunrise 2005, for example, should be considered closely to determine how many of those proposed changes can be combined with the changes that are proposed here.

In the end, everyone chooses their own track and pace at which to move through these changes. But the combination of GTIN/GLN/GDS is a coherent set of changes that represents an attainable goal with obvious business benefits. The spin-off to other improvements can be seen as an additional benefit, but it can also be left out of the equation.

Invisibility of Inefficiency

The effort dedicated to dealing with incomplete and incorrect information is entwined very tightly with other activities in existing business processes. The improved productivity of employees who will no longer need to deal with information errors while carrying out their value-creating activities cannot be easily estimated. In fact, employees are implicitly rewarded for their ability to deal with incomplete and erroneous data, but much of their effort does not get captured in a general ledger account.

This invisibility of inefficiency is hampering progress in this area. Unless you assess your current processes and estimate the amount of time that is spent on misunderstandings that can be eliminated or reduced through better communication standards, you will not be able to demonstrate the scale of the inefficiency. At the same time, the challenge is to think through how this time gained can be put to better use.

Common Issue for Business and IT

Many organisations have approached GDS as a technology change, yet the attainment of meaningful benefits from GDS will require broad-based business transformation. Historically, data accuracy may have been considered IT's responsibility by the business people

and a business responsibility by IT people. The key to effective data synchronisation comes from a combined approach, where business and IT improve the data accuracy together. Data owners have to be identified and the systems should maintain the data in such a way that this data ownership can be enforced.

Implementation Choices

We have gone through so many twists and turns in the recent e-business history that people may question whether GDI is really a necessary next step: Isn't this much like some of those Internet initiatives that have cooled down considerably? And if this is the right next step, how do I make sure that the solution that I choose will be viable in another two years, and that it will be (or stay) interoperable with the solutions that my trading partners are choosing?

This is of course a valid argument that should not be underestimated. There are, however, some differences, compared with recent history:

- The global standards that are now proposed are being endorsed by the leaders of the industry, not by external solution providers to the market.
- Interoperability is the core message of these solutions, especially for GDS. The protocol allows for interoperability between the data pools, but still leaves room for specific solutions for the connection between the data pool and the trading partners. In this way it enforces a solution that stays as close as possible to the global standards.

The combination of GTIN/GLN/GDS is a coherent set of changes that represents an attainable goal with obvious business benefits.

- The data pools will become certified to show that they adhere to the standards. This should be done by an external and independent party.
- The further development of the standard will be taken on by the EAN•UCC Global Standards Management Process (GSMP). This should enforce improvements on a global basis that previously could not be managed on a global scale.

This means that it will require continual effort and dedication to guide this process to a truly uniform mature solution. However, the prerequisites to do this are in place.

Waiting for the 100 Percent Solution

Even though general agreement is being reached about the first stages of the rocket (GTIN, GLN and neutral master data), ongoing discussions concerning the final stage (relationship-dependent data) can seriously cripple overall progress. The tendency to accept only "full solutions" (however manual they may be behind the scenes) can prevent early adoption of a better, but not yet complete global solution.

The tempting solution to this would be to "cut some corners" and reach local agreement on these issues. However, this can lead to the lock-in on fragmented

solutions that global standards are designed to prevent. Progress can be achieved from these experiments, but the overall goal should be to keep the solution common to the highest degree possible.

The standards will undoubtedly evolve over time, as the GSMP process adds approved change requests and incorporates new technologies as they become available (e.g., Radio Frequency Identification). There is a great need to do this coherently and to work from the bottom up. When done skilfully and in collaboration with the main trading partners, there will be a competitive advantage for those first movers.

Conclusion: Making Global Standards Happen

The return on investment from the adoption of global standards and the implementation of data synchronisation promises to be substantial.

In the preceding sections, we have approached "the case for global standards" from different angles. We have taken the long-term perspective to address the global aspect and then zoomed in to establish the viable first step toward this goal, the implementation of GTIN, GLN and GDS. The conclusion that can be drawn from the development of the business case can be stated in a single sentence:

Global Data Synchronisation (based on GTIN/GLN) should be implemented now.

Let's take this sentence apart and reiterate the arguments:

Why implement data synchronisation?

- Data synchronisation is currently relatively underdeveloped. This situation is impeding further improvements in the supply chain.
- The return on investment from data synchronisation can be substantial, even when only medium-term benefits are considered. The long-term strategic outlook of collaborative business processes (such as efficient replenishment and CPFR) should tip the scale further in favour of data synchronisation.
- The benefits range from productivity gains and working capital reduction to revenue gains and increased customer satisfaction.

- Companies of all sizes will enjoy the benefits.
- The identification of the benefits makes it clear that the improvement potential for manufacturers and retailers is comparable.
- The implementation costs will be considerable and will vary depending on the current state and ambition of each company, but the implementation process can be phased to spread out the investments.

Why implement data synchronisation on a global scale?

- Global adoption provides the opportunity to invest in a single solution rather then in several regional and/or local data synchronisation solutions. This uniform approach is the only way to make collaborative concepts (e.g., Efficient Consumer Response) scaleable, efficient and rewarding.
- Ongoing growth in cross-regional trading needs to be supported.
- Corporate management of multiregional companies will become more efficient and enhanced.
- There currently are local standards and proprietary systems, which in a lot of cases still need to be harmonised. This process creates the opportunity to move to more uniform standards at the same costs. After all, how standard is a standard when everybody doesn't use the same one?

The benefits from GDS range from productivity gains and working capital reduction to revenue gains and increased customer satisfaction.

Why implement GDS now?

- The standards are becoming available. There is enough agreement on the basics to move forward uniformly.
- The window of opportunity to accomplish this uniformly on a global basis exists now. However, it will not be long before we may be faced with a multitude of solutions that lead to a lock-in on technology, leaving the way out obstructed by disinvestments.
- There is money to be gained through internal adoption even before external synchronisation. This can lead to a competitive advantage for early adopters.
- The full success of data synchronisation depends heavily on quick adoption by the industry. Critical mass is needed in order to make a positive business case for the industry.
- Ongoing leadership from the bigger or more advanced retailers and manufacturers will be needed to move this forward. Waiting will only give others a reason to wait as well, and in the end nothing will happen.

After addressing these questions, there may be one aspect that still needs to be covered. How attainable is this goal? We think that the right elements are in place to make the goal realistic:

- There is a global effort in place, represented by parties such as EAN•UCC and GCI, to provide the needed coordination across the globe. The necessary standards for GDS are being further developed on a global basis through the EAN•UCC Global Standards Management Process (GSMP).
- The elements of the architecture and applications are available, having been developed over time through several independent initiatives. They need to be coordinated and linked into a uniform network of data pools. Many of the potential data pools have already agreed to become GDS compliant.
- In order to achieve the first benefits, it is not necessary to implement large-scale changes to the current processes. Data accuracy, however, is a necessary prerequisite.

The case is written, the evidence is clear. Let's go and make this happen.

Next Steps: The Journey to Implementation

The development of a company-specific business case is the most important action item for any business that hopes to move toward standards implementation.

There are a number of critical next steps that must be taken in order to achieve adoption of global standards:

- The necessary standards need to be further developed. This is currently being done through the EAN•UCC Global Standards Management Process (GSMP).
- The global registry needs to be developed. This is also currently being taken on by EAN•UCC.
- The data pools need to become GDS compliant through a certification process.
- Implementation should be encouraged to create the necessary critical mass.
- Further education and communication are urgently needed.

In the context of this document, however, the most appropriate next step is to build your company-specific business case.

Building Your Company-Specific Case

Over the course of this project, we learned that many of the more obvious benefits of global standards are well-known to the industry, but only at a high level. Everyone recognises, for example, the problem of invoice mismatches and the administrative overhead around catalogue maintenance. But assessing the size of these inefficiencies is more difficult. This assessment is even harder when addressing the expected revenue benefits from improved data accuracy and less rework.

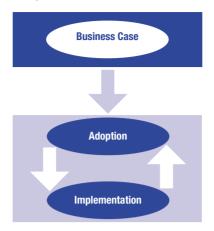
It's clear that only through a thorough discussion with the experts that know a particular operation well is it possible to gain accurate insight into the company-specific benefit potential and necessary implementation costs. The elements needed for this discussion are now available in the form of a rationale that reflects the consensus reached by executives from many manufacturers and retailers.

To build your own company-specific business case, we recommend the following steps:

- Create awareness and buy-in within your organisation through education. There is much material available to effectively communicate the basic elements.
- Define your ambition level with regard to the adoption of these standards over the course of the next few years. The "spider web model" presented in the future state chapter (see "What Will Change?") can help you make these goals more explicit. The GCI scorecard (www.globalscorecard.net) can help to synchronise your plans with those of your trading partners.
- Build your company-specific business case on the basis of the rationale. You will need to assess your current business processes to define the benefits and your current IT landscape to define the implementation costs. The specified ambition level will allow you to spread the investments over time. In the Appendix you will find more details about the business case analysis.
- Use the business case to underpin your budget proposal and start to build your roadmap or project plan for the coming years.
- The business case can again be used to identify the key performance indicators (KPIs) to track the benefits and maintain visibility of the overall progress.

For more information about the detailed logic used to develop the business case rationale, please refer to www.cgey.com/GClcase.

Business Case to Support Adoption and Implementation of Global Standards



Source: Cap Gemini Ernst & Young

Appendix

Business Case Project Process

The engagement: In early 2002 the GCI Steering Group asked Cap Gemini Ernst & Young (CGE&Y) for support in developing the business case rationale for implementing a number of GCI-endorsed EAN•UCC standards. The objective of this exercise was to facilitate the process of adoption and implementation of these standards. It was expected that a clear analysis of the benefits that these standards will bring for individual companies would help executives to make a sound judgement regarding the implementation of global standards in their own companies.

The decision was made to focus on GTIN (Global Trade Item Number), GLN (Global Location Number) and GDS (Global Data Synchronisation).

The process to develop this business case consisted of two main parts: interviews and ASE events.

The interviews: In April and May 2002 the CGE&Y team conducted in-depth on-site interviews with 16 operating companies representing 11 retailers and manufacturers:

- Retailers: Carrefour, Ahold, Metro, Tesco, Target
- Manufacturers: Unilever, Kraft, Johnson & Johnson, Nestlé, Procter & Gamble, Coca-Cola

The interviews covered a wide range of business areas, including supply chain, warehouse management, category management, brand management, buying and selling, financial control and IT management. The

interviews provided rich content regarding both industry-common and company-specific elements of the business case for global standards.

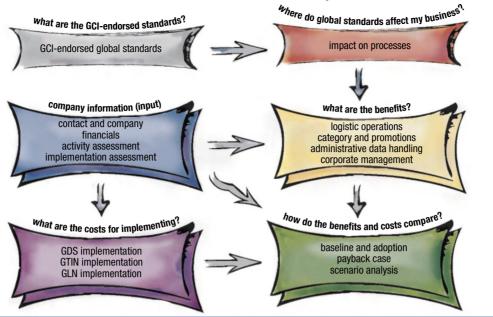
The ASE events: Cap Gemini Ernst & Young's unique Accelerated Solutions Environment (ASE) was used to bring the diverse perspectives of a variety of retail and consumer product companies together to develop a jointly assembled business case model. A three-day ASE event was held in Utrecht, The Netherlands, at the end of May and another was held in Chicago, Illinois, at the end of July, in which a total of 85 participants from 22 companies worked collaboratively on the business case for global standards:

Utrecht ASE: 34 participants representing Henkel, Coca-Cola, Philips Lighting, Metro, Ahold, Sara Lee, Johnson & Johnson, Carrefour, Masterfoods, Unilever, Tesco and Kraft (plus EAN International and CGE&Y)

Chicago ASE: 51 participants representing Procter & Gamble, Unilever, Coca-Cola, Fleming, Gillette, Georgia-Pacific, Albertson's, Kraft, Ahold, Kodak, Target, Johnson & Johnson, CVS, Sears and Best Buy (plus UCC, EAN International, ECCC and CGE&Y)

Both ASE events resulted in a clear analysis of the business case for global standards. Additionally, they created a better awareness of and constructive discussions about the topic.

Overview of the Business Case Analysis



The Cap Gemini Ernst & Young team: The project required the involvement of many CGE&Y people from around the globe. The result would not have been possible without the help of the following people: Sven Hoemmken, Joerg Baier (Germany), Reiner Pelzer (Austria), Cederic Lefevbre, Jean Jacques Bergdoll (France), Liz Edwards, Chris Badcock, Chris Webster, Roger West (U.K.), Nina Groothuijzen, Barend Mutsaers, Erik Godijn, Bernard Helders, Hans Willemse, Lisette Reek, Rolf Colenbrander (Netherlands), Mike Green, Scott Pettit, Renee Speicher, Joe Pavalon, Priscilla Donegan, Stella Goulet, Dan Stevens (U.S.), Ian Rogers (Canada), the Utrecht ASE team and the Chicago ASE team.

All activities were initiated and coordinated by the core team, consisting of Russ Jones, Kees Jacobs, Mick Werson and Ard Jan Vethman.

Overview of the Business Case Analysis

It's clear that companies must build their own specific business case to justify budget proposals for implementation. All elements for this business case are available publicly. In addition to this report, a detailed logic for the business rationale is publicly available online (www.cgey.com/GCIcase).

CGE&Y has further developed a business case analysis tool to facilitate the development of a company-specific business case. The tool is illustrated in the diagram above. This tool can be used to demonstrate the benefits that justify the investments needed for implementing GTIN, GLN and GDS.

The tool is organised to first capture an overview of the standards as they are expected to impact current company processes. Next, company-specific details are added, driving the calculation of the benefits and implementation costs.

The tool is initially populated with reference values. By adjusting these values to match a company's specific situation, the tool produces a more appropriate calculation of benefits and costs.

Output from the benefits and costs pages come together in the payback and scenario analyses. These scenarios allow for comparison of the benefit and cost potentials based on projected adoption rates, cost variability and offset to a baseline.

Source: Cap Gemini Ernst & Young

The payback case is based on cash flows and includes several metrics, such as Net Present Value, Internal Rate of Return, Payback Period and Economic Value Added. Finally, the model provides the ability to perform a sensitivity analysis.

The business case analysis tool is not available publicly. This tool needs additional services to be used appropriately. A high-level calculator is available online that can be used without support. Information can be found at www.cgey.com/GClcase.

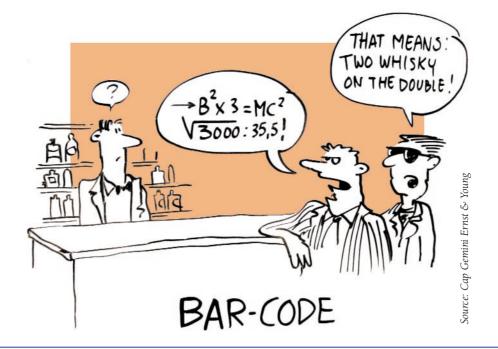
Overview of GCI-Endorsed Standards

GCI is endorsing standards that were developed by (or together with) EAN and UCC. Some of these standards are documented here. The text is taken from EAN•UCC reports or GCI working groups' material.

The EAN•UCC standards facilitate national and international communication among all trading partners participating in any supply chain, including raw material suppliers, manufacturers, wholesalers, distributors, retailers, hospitals and final clients or consumers.

Many businesses are expanding their distribution channels toward markets and clients that may not be traditional for them, into other sectors of industry. A business that chooses an industry-specific standard will face the potentially high costs of maintaining two systems if it wants to sell its products or services or simply communicate outside its "closed world."

Many operations that are essential for the efficiency of trade and the optimisation of the supply chain depend on the accuracy of identification of the products exchanged, services rendered and/or locations involved.



The EAN•UCC System is a set of standards enabling the efficient management of global, multi-industry supply chains by uniquely identifying products, shipping units, assets, locations and services. It facilitates electronic commerce processes, including full tracking and traceability. The identification numbers can be represented in bar code symbols to enable electronic reading at point-of-sale, when being received at warehouses or at any other point where it is required in business processes. The system is designed to overcome the limitations of using company-, organisation- or sector-specific coding systems, and to make trading much more efficient and more responsive to customers.

The EAN•UCC System has different areas of application that include trade items, logistic units, assets and locations. These applications rely on data structures by which all relevant items and their data can be identified. The numbers are the keys to access databases and to unambiguously identify items handled in all messages of a transaction. Data structures are purely for identification without any meaning in the number. All information that describes a product or a service and its characteristics are to be found in databases. They are communicated from a supplier to a user once, before the first transaction either by using standard messages or by consultation of electronic catalogues.

The numbers are represented in bar codes to allow automatic data capture at each point where an item leaves or enters a premises. Bar codes are usually included in the production process at the producer site; they are either pre-printed with other information present in the packaging, or a label is affixed to the item on the production line.

The same numbers are also used in EDI messages to allow all information on the transaction of the item to be transferred to the relevant trading partners. The data structures that are provided guarantee worldwide uniqueness within the relevant area of application. The numbering system has three main elements: Global Trade Item Number, Global Location Number and the Serial Shipping Container Code (SSCC).

This last element will not be further detailed in this Appendix as it is not essential for Global Data Synchronisation.

GTIN: The Global Trade Item Number (GTIN) is a number (also called a data structure) and is used for the unique identification of trade items worldwide. A trade item is any item (product or service) about which there is a need to retrieve pre-defined information and that may be priced, or ordered, or invoiced at any point in any supply chain. This includes individual items as well as all their different configurations in different types of packaging. These data structures provide unique identification when they are right-justified in a 14-digit reference field, called the GTIN Format. This format is used in business transactions, especially for Electronic Data Interchange (e.g., orders, invoices, price catalogue).

The identification and symbol marking of trade items enables the automation of the retail point-of-sale (through price look-up files), of products receiving, inventory management, automatic re-ordering, sales analysis and a wide range of other business applications.

Examples: A can of paint sold to a final consumer, a box of six cans of paint, a case containing 24 boxes of 1 kilo of lawn fertiliser, a multipack consisting of one shampoo and one conditioner.

Within the GTIN the data structures that exist are EAN•UCC-14, EAN•UCC-13, UCC-12 (U.P.C.) and EAN•UCC-8 (see diagram, page 46). By 2005 companies need to be able to accept EAN•UCC-14 as all new GTINs will be 14 digits at that time.

Data structure:

- Unique trade items have unique GTINs.
- Different products have unique GTINs.
- A consumer product and a case of the product must have unique GTINs.
- Intermediate packages must have unique GTINs.

UCC-12, EAN/UCC-13, EAN/UCC-8, and EAN/UCC-14 in a GTIN-Compliant Database

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wrce: GCI

• Different case counts of the same product must have unique GTINs.

To have a compliant database:

- Ensure that all databases have a 14-digit structure.
- Right-justify all numbers, justify and zero-fill any product/service GTIN number that comes into your database.

GLN: The Global Location Number (GLN) provides a standard means to identify legal entities, trading parties and locations to support the requirements of electronic commerce. The GLN is designed to improve the efficiency of integrated logistics while contributing added value to the partners involved, as well as to customers. Examples of parties and locations that can be identified with GLNs are:

- Functional entities E.g., a purchasing department within a legal entity, an accounting department, a returns department, a nursing station, a ward, a customer number within a legal entity, etc.
- Physical entities E.g., a particular room in a building, warehouse, warehouse gate, loading dock, delivery point, cabinet, cabinet shelf housing circuit boards, room within a building, hospital wing, etc.
- Legal entities/trading partner E.g., buyers, sellers, whole companies, subsidiaries or divisions such as suppliers, customers, financial services companies, freight forwarders, etc.

GDD: The Global Data Dictionary (GDD) is the continuation of an industry-common effort to define a global and unique set of attributes to describe items and parties (the Global Data Alignment System, GDAS). This effort has led to the publication of the following documents:

- "Electronic Catalogues EAN Recommendations Common Set Of Data" (June 1998-June 1999)
- "Global Data Alignment GCI" (21 January 2000 and 24 July 2000)

 "EAN•UCC Business Message Standards Version 1.0" (July 2001)

The Global Data Dictionary Working Group initially had to validate the content of the Business Messages Standards (July 2001) and therefore initiated a gap analysis with the July 2000 version of GDAS. This gap analysis was mainly resulting from:

- Divergences between Business Messages Standards and GDAS (identification rules, principles, etc.).
- XML terminology only in the Business Messages Standards.
- One-to-one alignment rather than Master Data Alignment.

The Global Data Dictionary Working Group then officially started to update the content of GDAS:

- Workgroup started August 2001 Wiesbaden.
- Members: GCI and EAN•UCC, led by Nick Fergusson.

In parallel with the work done on content, the group is also defining the infrastructure requirements:

- Kick-off meeting in Princeton November 2001.
- Group led by Ted Osinski.

Objectives of GDD:

- Delivery of data content.
 - Master Data Synchronisation is the target.
 - Define the base for data pools compliance.
- Delivery of implementation guideline.
 - Principles and rules.
 - Definitions and references.
 - Endorsed by GCI as the new Item Data Model, replacing GDAS.

- Bring content and infrastructure together.
 - Today the Infrastructure team still works on official content (Messages Standards).
 - We need to ensure the transition to the new GCI-endorsed standard.
 - New content is reflected in all schemas using item data.
 - Prepare transition to Global Standards Management Process (GSMP).

Scope of GDD:

- Item data
 - The current document focuses on item data model and implementation guidelines for master data alignment.
 - Party and additional data types will have to be processed through the GSMP process.

• Core data

- Although we have identified the need for sector-specific data (extensions) we have focussed on the core set of data – applicable to all sectors.
- This will become the lowest common denominator for data synchronisation and product identification processes.

• Master data

 Although the Global Data Dictionary will eventually include all data fields required in any simple e-business transaction, we have focussed on the data fields required for master data synchronisation as this is a prerequisite for any other transaction.

• Neutral data

- We have chosen to focus on neutral data, as that will be the primary requirement to pop ulate the product catalogue.
- Relationship-dependent data will have to be added in a subsequent phase, and will require that an additional dimension be added to the key to the item data: the GLN of the data recipient.

• Snapshot

- The current version (April 2002) of the Item data model should not be considered as a "final" model but as a snapshot of the model in the way we have understood it.
- It will continue to evolve through the GSMP process and mainly through the expansion to non-core and transactional data.

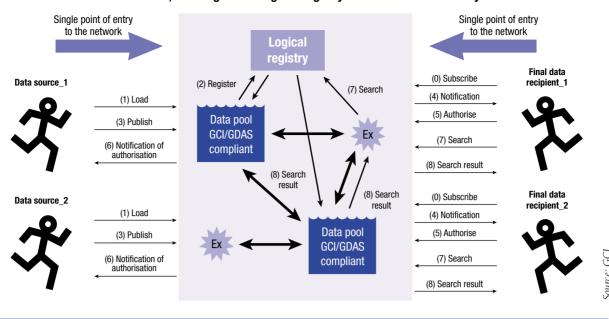
Simpl_EB Concept: The concept of Simpl_EB can be seen as the basis for Global Data Synchronisation. The aim of Simpl_EB is a more efficient and effective exchange of information. Simple E-Business requires the application of standards to ensure a common definition of e-business parties, data and processes.

The Simpl_EB concept is based on the following principles:

Use of simple, standard processes across value chains. Simpl_EB is based on best-practice business processes, including:

- Simplification and standardisation of common processes across the value chain.
- Elimination of unproductive and redundant steps.
- Assignment of each activity to an "actor" or party responsible for its successful completion.
- Supplying only the usable information that is required to complete each step in the process.

Network With Data Pools, Exchanges and Logical Registry: Vision for Global Data Synchronisation



• Each business transaction corresponding to a single physical event in the process chain.

Pre-alignment of master data: Simpl_EB is based on the understanding that transactional data must be limited to information that is critical to the transaction. Every effort is made not to replicate information that is understood in advance of the transaction (e.g., party address and terms remain stable across multiple purchase orders). The class of information known as master data is aligned in advance of transactional data.

Independence from syntax and technology: The data and process definitions used as the foundation for Simpl_EB are isolated from changing technology and data syntax (i.e., formats) by business processes in terms of business models.

Standard data element definitions: All participants in a value chain share a common interpretation of the information that they exchange. This is accomplished through clear and standard data element definitions. This requires a set of (syntax-neutral) data guidelines that all parties use to interpret data.

- Use of terminology tables
- Standard use of synonyms
- Single naming convention

Standard identification linking transactions to master data: Standard identification is used to link master data to transactional data.

Simpl_EB applies to business processes throughout the business cycle: Simpl_EB can be used when defining the planning, execution and reporting functions.

The Simpl_EB principles can be summarised and depicted as follows:

One buyer, one seller.

- General sales conditions and trading partner agreement are set out.
- Data alignment for item, party and price has been realised.



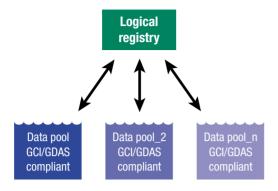
- One order placed for one delivery in one location at one time.
- Consistency: Shipping unit, order unit and invoice unit are the same through all the processes.
- The order currency is the invoice currency.
- One currency by invoice.
- GTIN is the same for the whole process between order, despatch and invoice.

GDS: The vision for a Global Data Synchronisation process shown in the diagram above ("Network With Data Pools, Exchanges and Logical Registry") is taken from the GCI GDS report 1 (December 2001). This vision is based on the following considerations:

- Data sources and final data recipients benefit from a single point of entry to the network, which is comprised of data pools and the global registry.
- Data sources and final data recipients do not have direct access to the global registry.
- In order to support the reliability of the flow of information along the supply chain, the first priority is the synchronisation of data between data sources and final data recipients.

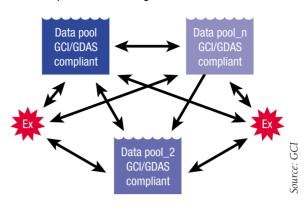
Business Scenario for Data Registration

- Flow of information is supported by the set of data defined for the registry.
- Data sources and data recipients cannot directly access the registry.



Business Scenario for General Master Data Synchronisation

- Registry is not a global switch where all the data flow goes through.
- Standardised information flow between data pools and exchanges.



- The global search function should be considered in a second phase. However, there is a need to implement a basic search function from the beginning in order to support business requirements such as category management.
- The network should not have a single point of failure for daily transactions. Multiple routes for the flow of information must be possible. There will be no "Central Switch" through which all information will flow.

There are different business scenarios described in the diagram (previous page):

Registration: Information flows between data pools and the logical registry. This flow is supported by the set of data defined for the logical registry. Data sources and data recipients do not have direct access to the registry (diagram, above left, "Business Scenario for Data Registration").

Global master data synchronisation: The flow of information is between data sources and final data recipients through the exchanges and/or home data pools (diagram, above right, "Business Scenario for General Master Data Synchronisation").

The logical registry is not involved in the data synchronisation process and is not a global switch (avoiding single point of failure).

Subscription: Data pools store and execute all types of subscriptions (e.g., generic subscription where a final data recipient subscribes to a category).

The logical registry is not involved in this process. It does not store data subscriptions and does not execute any kind of subscriptions (diagram, above right).

Data publication: Since data sources do not access the logical registry, data pools ensure the publication of data. The logical registry is not involved in this process (diagram, above right).

Data notification: Data pools ensure the data notification. The logical registry is not involved in this process (diagram, above right).

Global search: The global search is enabled through the logical registry, which maintains a pointer to the data pools where the original master data is stored (diagram, previous page, functions 7 and 8).

There are three possibilities to run such a function:

- 1. The registry only returns the location of the data to the requester.
- 2. The registry forwards the request to the data location, which will provide full data.
- 3. The registry forwards the request to the data location, aggregates answers and forwards answers to the requester.

The most efficient option will be documented in a future version of the GDS report.

For more information about these standards, please refer to the following sources:

- EAN•UCC "Global User Manual" or the general EAN•UCC specifications.
- EAN International website: www.ean-int.org
- UCC website: www.uc-council.org
- GCI website: www.globalcommerceinitiative.org

Glossary

The following glossary of relevant terms is a subset of the official GCI glossary.

Acknowledgement: In contrast to the notification function, the acknowledgement is a response to a command (e.g., add, change) returned to the originator of the command. Every command needs a response and is handled according to the agreement between the parties involved (e.g., source – data pool, final recipient – exchange). In the interoperable network, acknowledgement messages are standardised and may contain the following information:

- Confirmation of message receipt
- Success/failure of processing (syntax and content)
- Reason for failure, with a code assigned to each failure

Authorisation: The final recipient communicates with the data source, expressing intent to regularly integrate new information into its back-end system ("agreement to synchronise"). For case items, it expresses the intent to trade the item. Note: Authorisation works on the basis of GTIN level and GLN of information provider and target market and is sent once for each GTIN. The buyer can use any level in the GLN hierarchy according to the business need (e.g., DSD – store level). This function will be further documented during the detailed specifications phase.

B2B: Business to Business. Information exchange taking place between two companies as opposed to involving consumers. Generally this implies that at least one of these links, and often both, will involve integration into a business application.

Catalogue: A catalogue is like the telephone yellow pages, only it is electronic and includes much more explicit detail on products and services offered by suppliers. With a simple click of a mouse, a buyer can access a catalogue and obtain a global list of suppliers and their products. The catalogue is divided into several different layers of data ranging from category and product type to length and width details. A buyer can look for product information on a catalogue search engine similar to the Internet's Yahoo or Netscape Navigator. Once the buyer types in the key words, moments later he or she has a comprehensive listing of suppliers, categories and product data.

Category: A classification assigned to an item that indicates the higher level grouping to which the item belongs. Items are put into logical like groupings to facilitate the management of a diverse number of items.

Category Hierarchy: The classification of products by department, category and subcategory; for example, "Bakery, Bakery Snacks, Cakes."

Category Scheme: Structured grouping of category levels used to organise and assign products.

Collaboration Arrangement: The process in which a seller and a buyer form a collaborative partnership. The collaboration arrangement establishes each party's expectations and what actions and resources are necessary for success.

Country Catalogue: GTIN and/or GLN catalogue administered by an EAN Member Organisation. Commonly referred to as country data pools.

CPFR: The Collaborative Planning, Forecasting and Replenishment (CPFR®) offering will enable collaboration among all supply-chain-related activities. This collaboration will include setting common cross-enterprise goals and performance measures, creating category/item goals across partners and collaborating on sales and order forecasts. Performance will be monitored as collaborative activities are executed providing participants with the ability to evaluate partners. (www.cpfr.org)

Data Loading: A data source sends a full data set to its home data pool. The data loaded can be published only after validation by the data pool and registration in the global registry. This function covers:

Data Pool: A data pool is a repository of GCI/GDAS data where trading partners can obtain, maintain and exchange information on items and parties in a standard format through electronic means. Multiple trading partners use data pools in order to align/synchronise their internal master databases (GCI GDS definition).

Data Source: Party that provides a community of trading partners with master data. The data source is officially recognised as the owner of this data. For a given item or party, the source of data is responsible for permanent updates of the information that is under its responsibility (GCI definition). A data source is also known as "Publisher." Examples of data sources: manufacturers, publishers and suppliers.

Direct Store Delivery (DSD): A method of delivering product from a distributor directly to the retail store, bypassing a retailer's warehouse. The vendor manages the product from order to shelf. Major DSD categories include greeting cards, beverages, baked goods, snacks, pharmaceuticals, etc.

EAN International: EAN International is the worldwide leader in identification and e-commerce. It manages and provides standards for the unique and non-ambiguous identification and communication of products, transport units, assets and locations. The EAN•UCC system offers multi-sectoral solutions to improve business efficiency and productivity. EAN International has representatives in 97 countries. The system is used by more than 850,000 user companies. (www.ean-int.org)

EAN•UCC: EAN and UCC co-manage the EAN•UCC System – the global language of business.

EAN•UCC System: The EAN•UCC System offers multisector solutions to improve business efficiency and productivity. The system is co-managed by EAN International and the Uniform Code Council (UCC[™]).

ECR: See Efficient Consumer Response.

EDI: Electronic Data Interchange. The computer-to-computer transmission of information between partners in the supply chain. The data is usually organised into specific standards for the case of transmission and validation.

Efficient Consumer Response (ECR): Initiative between retailers and suppliers to reduce existing barriers by focussing on processes, methods and techniques to optimise the supply chain. Currently, ECR has three primary focus areas: supply side (e.g., efficient replenishment), demand side (e.g., efficient assortment, efficient promotion, efficient product introduction) and enabling technologies (e.g., common data and communication standards, cost/ profit and value measurement). The overall goal of ECR is to fulfil consumer wishes better, faster and at less cost.

Electronic Commerce: The conduct of business communications and management through electronic methods, such as electronic data interchange and automated data collection systems.

Event: An event refers to a change of state in the system such as new or changed information regarding item, party, rights, permissions, profiles, notification, etc.

- Completion of tasks such as subscription, notification, data distribution, data distribution set-up, etc.
- · Arrival or forwarding of messages

Exchange: In the Global Data Synchronisation context, it is a provider of value-added services for distribution, access and use of master data. Organisations that provide exchanges can provide data pool function as well.

Final Data Recipient: Party that is authorised to view, use, download a set of master data provided by a data source. A final data recipient is not authorised to update any piece of master data provided by a data source in a public data pool (GCI definition). Final data recipient is also known as "Subscriber."

GCI: The Global Commerce Initiative (GCI) is a voluntary body created in October 1999 to improve the performance of the international supply chain for consumer goods through the collaborative development and endorsement of recommended standards and key business processes. (www.globalcommercerinitiative.org)

GDAS: Global Data Alignment Service

Global Data Dictionary: The GDD is a global list of data items where:

- The structure of attributes includes aggregate information entities (master data for party and item and transactional data)
- 2. Neutral and relationship-dependent data, core and extension groups and transaction oriented data
- 3. Definition of master data includes:
 - a. Neutral data: relationship independent, general valid data
 - b. Relationship-dependent data: depending on bilateral partner agreements
 - c. Core: irrespective of the sector and country
 - d. Extension: sector specific, country specific
- Definition of transactional (process-dependent) data includes neutral and relationship-dependent as well as core and extension

Global Location Number (GLN): A 13-digit non-significant reference number used to identify legal entities (e.g., registered companies), functional entities (e.g., specific department within a legal entity) or physical entities (e.g., a door of a warehouse).

Global Registry: A registry is a global directory for the registration of items and parties. It can only contain data certified GCI compliant. It federates the GCI/GDAS-compliant data pools and acts as a pointer to the data pools where master data has been originally and physically stored. From the conception viewpoint, the registry function is supported by one logical registry, which could be physically distributed.

Global Trade Item Number (GTIN): An "umbrella" term used to describe the entire family of EAN/UCC data structures for trade items (products and services) identification. The family of data structures includes: EAN/UCC-8, UCC-12, EAN/UCC-13 and EAN/UCC-14. Products at every level of product configuration (consumer selling unit, case level, inner pack level, pallet, shipper, etc.) require a unique GTIN. GTIN is a new term, not a standards change.

Home Data Pool: The home data pool is the *preferred* data pool of a data source or a data recipient. A data source publishes its data in its home data pool, which makes it available to final data recipients. A final data recipient accesses master data through its home data pool. A home data pool could be a national, regional or private GCI/GDAS-compliant data pool. The home data pool is the key aspect of the single point of entry concept.

Interoperability: Data pools and the global registry are connected so that they constitute one logical data pool, which makes available to users, all required master data in a standardised and transparent way.

Item: An item is any product or service on which there is a need to retrieve pre-defined information and that may be priced, ordered or invoiced at any point in any supply chain (EAN/UCC GDAS definition). An item is uniquely identified by an EAN/UCC Global Trade Item Number (GTIN).

Mapping: The process of relating information in one domain to another domain. Used here in the context of relating information from an EDI format to one used within application systems.

Master Data: Master data is a data set describing the specifications and structures of each item and party involved in supply chain processes. Each set of data is uniquely identified by a Global Trade Item Number (GTIN) for items and a Global Location Number (GLN) for party details. Master data can be divided into neutral and relationship-dependent data. Master data is the foundation of business information systems.

Master Data Synchronisation: It is the timely and "auditable" distribution of certified standardised master data from a data source to a final data recipient of this information. The synchronisation process is well known as "Master Data Alignment" process. The master data

synchronisation process is a prerequisite to the Simple E-Business concept (Simple_EB). Successful master data synchronisation is achieved via the use of EAN/UCC coding specifications throughout the supply chain. The synchronisation process is completed when an acknowledgement is provided to a data source certifying that the data recipient has accepted the data distributed. In the master data synchronisation process, data sources and final data recipients are linked via a network of interoperable data pools and global registry. Such an interoperable network is the GCI-Global Data Synchronisation Network.

Neutral Master Data: It is master data that is generally shared among multiple parties and that is relationship independent (e.g., GTIN, item description, measurements, catalogues prices, standard terms, GLN, addresses) (GDAS definition). Most of the existing data pools facilitate the exchange of neutral master data.

Notification: The data source, through its home data pool/solution provider, sends an electronic notice to a subscriber when a valid event occurs. This is based on the subscription profile. Events that can trigger notifications are:

- Publication of new data/change of publication (visibility granted, deleted)
- Change of published item/party/partner profile
- · Change of owner, rights
- Subscription (generic, detailed)
- Authorisation/non-authorisation/rejection
- Positive search response

Notifications are not sent in the following cases since data are not yet public and validated information:

- Data load (add, change, etc.)
- Data validation
- Registration of new item/party/partner profile The data distribution, which is the movement of data from one entity to another, is handled through a specific notification type.

Party: A party (or) location is any legal, functional or physical entity involved at any point in any supply chain and upon which there is a need to retrieve pre-defined information (GDAS definition). A party is uniquely identified by a EAN/UCC Global Location Number (GLN).

Point-of-Sale (POS): Place where the purchase is made at the checkstand or scanning terminals in a retail store. The acronym "POS" frequently is used to describe the sales data generated at checkout scanners. The relief of inventory and computation of sales data at a time and place of sale, generally through the use of bar coding or magnetic media equipment.

Publication: The data source grants visibility of item, party and partner profiles, including party capabilities data to a given list of parties (identified by their GLNs) or to all parties in a given market.

Query: A data source or a final data recipient triggers an inquiry, a subscription and gives a status on a particular event or information element. In this function, all the acknowledgements and audit trails are covered.

Registration: Registration is the process that references all items and parties published in all GCI/GDAS-compliant data pools and on which there is a need to synchronise/retrieve information. This is supported by data storage in accordance with the registry data scope and rules.

Relationship-Dependent Master Data: Globally, it is master data that concerns all terms bilaterally agreed and communicated between trading partners such as marketing conditions, prices and discounts, logistics agreements, etc. (EAN/UCC GDAS definition).

Repository: A storage mechanism for finalised DTDs and other XML components. In this context a repository is the wrapping of potential business library components into information that can be used in an implementation.

Search/Browse: This provides data visibility according to user's permissions and certain criteria such as categories, GTIN, GLN, target market, etc. The home data pool provides this visibility in the framework of the GCI interoperable network.

Serial Shipping Container Code (SSCC): The EAN•UCC number comprising 18 digits for identifying uniquely a logistic unit (licence plate concept).

Standard: A specification for hardware, software or data that is either widely used and accepted (de facto) or is sanctioned by a standards organisation (de jure). A "protocol" is an example of a "standard."

Subscription: A data recipient requests that it receive a "notification" when a specific event occurs that meets the recipient's criteria (selective on sources, categories, etc.). This is subject to the recipient's access to information as controlled by the data source through its home data pool. There are two kinds of subscriptions:

- Generic subscriptions to generic types of data (item or party that is part of a specific category).
- Detailed subscriptions to a specific party (identified by its GLN) or specific item (identified by its GTIN)

With the set-up of a detailed subscription, a data recipient sets a profile to receive ongoing updates of the specific item, party or partner profile. The detailed subscription is also used to indicate an "Authorisation."

Trade Item: Any item (product or service) on which there is a need to retrieve pre-defined information and that may be priced or ordered or invoiced at any point in any supply chain.

UCCnet: www.uccnet.org

Uniform Code Council (UCC): The Uniform Code Council (UCC), based in the United States, is a membership organisation that jointly manages the EAN•UCC System with EAN International. The UCC administers the EAN•UCC System in the United States and Canada.

Universal Product Code (U.P.C.): UCC-12 data structure. One-digit number system character with 10-digit EAN•UCC Company prefix and item reference with one check digit. One of four data structures used in the Global Trade Identification Number (GTIN).

Validation: Validation is compliance checking of new or changed data versus GCI/GDAS Data Standards, principles and rules. The validation consists of ensuring as a minimum:

- Syntax (e.g., format of fields)
- Mandatory, dependent data (completeness of data)
- Semantic (e.g., can't make a change before add, allocation rules for GTINs and GLNs)
- Check of classification
- Uniqueness of the item/party/partner profile (checked by registry)

Value-Added Network (VAN): A third-party EDI service provider that provides a communication link between companies to enable electronic exchange of business data/documents.

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About the Global Commerce Initiative (GCI)

The Global Commerce Initiative (GCI) is a voluntary body created in October 1999 to improve the performance of the international supply chain for consumer goods through the collaborative development and endorsement of recommended standards and key business processes.

GCI operates through an Executive Board composed of senior representatives of more than 45 companies drawn equally from manufacturing and retailing and doing business across continents or via global supply chains. It operates under the sponsorship of eight existing organisations representing the interests of one million businesses, large and small.

Four of the sponsoring bodies represent the interests of manufacturers and retailers (AIM, CIES, GMA and FMI). Two sponsors (the ECR movements and VICS) develop working tools for the collaborative management of the supply chain. The other two bodies are the principal standards organisations, EAN International and the Uniform Code Council, Inc. (UCC).

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About EAN International and the Uniform Code Council (UCC)

EAN International and the Uniform Code Council, Inc. are voluntary standards organisations in charge of the development, maintenance and implementation of Open, Global, Multisectoral Standards based on Best Business Practices. EAN International and UCC offer business solutions to industries worldwide to improve supply chain management and other business processes that reduce costs and/or add value for both products and services.

EAN•UCC identification and business communications standards lead to total identification and traceability of goods and services in logistics, supply and administrative processes. EAN International and UCC administer the EAN•UCC System through the "Global Standards Management Process" (GSMP). The EAN•UCC global standards cover 129 countries and are used by 1 million companies worldwide.

For more information about EAN International and UCC please contact:

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avory@ean-int.org jterwilliger@uc-council.org

About Cap Gemini Ernst & Young

The Cap Gemini Ernst & Young Group is one of the largest management and IT consulting organisations in the world. The company offers management and IT consulting services, systems integration, and technology development, design and outsourcing capabilities on a global scale to help businesses continue to implement growth strategies and leverage technology. The organisation employs around 55,000 people worldwide and reported 2001 global revenues of more than 8.4 billion euros.

Cap Gemini Ernst & Young (CGE&Y) has one of the largest global practices focused on helping consumer products, retail and distribution companies transform their businesses by driving revenue, margin and shareholder value while helping them adapt to market volatility. CGE&Y's global Products, Retail and Distribution practice has thousands of practitioners helping clients in more than 30 countries. To learn more, click on "industries" at www.cgey.com.

For more information on "The Case for Global Standards" please contact:

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